

SISSA



FOR SCHOOLS

Academic Year 2022-2023

EVALUATION REPORT

Laura Busato, Lorenzo Carta, Anna Lisa Cesaro
Francesca Rizzato, Paola Rodari

August 2023

Summary

1. EXECUTIVE SUMMARY	2
2. SISSA FOR SCHOOLS AND ITS SPIN-OFFS	4
2.1 Thursday’s school visits	4
Visits’ programme	4
2.2 SISSA for Schools’ spin-offs	7
“SISSA for Schools va in classe”	7
“Un percorso nella ricerca contemporanea”	7
Trieste Next	7
2.3 SISSA volunteers’ recruitment and training	9
2.4 Products	9
2.5 Main results	9
3. EVALUATION	11
3.1 S4S – Evaluation by the teachers	11
3.1.1 Objectives and expected outcomes for the visit	11
3.1.2 Visit experience	12
3.1.3 Suggestions and preferences for future visits	12
3.2 Evaluation by the pupils	12
3.2.1 Evaluation by the pupils: primary schools	12
3.2.2 Evaluation by the pupils: junior high schools	14
3.2.3 Evaluation by the pupils: high schools	14
3.3 S4S – Evaluation by SISSA volunteers	15
3.3.1 Volunteers personal experiences	15
3.3.2 Participation in science communication training	17
3.3.3 Suggestions for future visits	17
4. GENDER BALANCE	18
4.1 Gender equality: numbers and participation	18
APPENDIXES	20
APPENDIX 1. SISSA FOR SCHOOLS CALENDAR 2022-2023	20
APPENDIX 2. EVALUATION QUESTIONNAIRES	22
APPENDIX 3. ACTIVITIES PROPOSED FROM THE BEGINNING OF THE PROGRAMME	32

1. EXECUTIVE SUMMARY

The academic year 2022-23 has been the tenth year of *SISSA for schools* (S4S), a very successful, free programme dedicated to classes known not only locally, but also outside the Friuli Venezia Giulia region, and appreciated by teachers, educators and pupils.

Thanks to the mitigation of the pandemic emergency, during the 2022-23 period school visits were organised again in person, after two years with mostly remote activities. The programme was structured in a main track, the traditional school visits to SISSA and its campus, plus three spin-offs:

- **Thursday visits**, the traditional programme, in which one or two school classes are welcomed on SISSA's premises every Thursday morning from October to May. During this school year we have hosted, when possible, two classes in parallel instead of a single one, in order to increase the access to the programme. That was the experimental solution for an old problem: every year we receive an high number of requests and we can host only approximately $\frac{1}{4}$ of the classes that were willing to participate. This doubling mostly involved middle or high schools, while we have preferred to host only one primary school at time, to allow smaller groups of pupils and a finer modulation of times and activities on the specific needs of the group.
- **"SISSA for Schools va in classe"**: in order to further widen the access to S4S's activities, in 2022 we developed a spin-off programme called "SISSA for Schools va in classe" ("SISSA for Schools goes into the classroom") devoted to reaching high school pupils of the region. This programme aims at offering the activities to schools outside Trieste that can face more difficulties to join the usual S4S programme, because of the geographical distance or other reasons. This programme was financed by the national Ministry of Education.
- **"Un percorso nella ricerca contemporanea"** ("A journey through contemporary research"): Starting in early 2023, we developed another spin-off programme devoted to university orientation for the final years of high schools. The special feature of this programme is its duration: the students participated in 5 three-hour workshops between January and May 2023 for a total of 15 hours per class, allowing a deeper connection with places and people and a more personalised experience. Also this programme was financed by the national Ministry of Education.
- **Trieste Next**: in September, during the science and technology festival Trieste Next, SISSA for Schools has proposed three workshops for high school classes during the two mornings devoted to the schools.

It has to be noted that in 2022-23 the traditional day dedicated to 500 pupils of the last two years of high school (i.e. the "Student Day") was not organised. SISSA governance decided to organise every year only one of the two biggest public events, the "Student Day" and the "Open Day", and in 2023 it was the "open Day" turn. (Unfortunately that event was also cancelled, because of the maintenance works that involved the main conference hall).

Altogether, S4S in 2022-2023 **involved more than 850 pupils**. This number, in spite of the two new spin-offs, is lower with respect to previous years because the 500 participants of the Student Day were missing. However, it should be considered that the almost 80 pupils involved in the orientation programme were not part of a one-morning event, but of a six-month course, which can lead to a **deeper and more lasting** impact.

As usual, the activities involved SISSA PhD students and researchers (approximately 50 people) with the support and the organisation of SISSA Medialab. Medialab staff has designed the programme, taken care of the organisation, trained and coached the volunteers, facilitated all events. In the staff: Laura Busato, Lorenzo Carta, Anna Lisa Cesaro, Francesca Rizzato (project supervisor), Paola Rodari (head of the public engagement department), S4S is a member of EUCUNET, the international network of Children's Universities.

1.1 Objectives

S4S promotes SISSA, its international status and the very high quality of its research to the younger generation, especially to kids and teenagers living in the Friuli Venezia Giulia Region. S4S aims at showing young people, from a very young age, how research is really produced and managed at SISSA, through its scientists, technicians and administrative staff, thus offering a realistic picture of what science and scientists' life really is.

S4S objectives, from the very first year of the programme, can be summarised as follows:

Get support. The scientific community cannot operate without the support of society, which provides direct financing or, indirectly, legislation that facilitates scientific and technological research.

Gain trust. In the absence of an attitude of trust in the scientific community, both facts and figures may be challenged by large groups of citizens, including policymakers. Gaining trust and being considered reliable partners require a careful and continuous communication commitment.

Improve governance. There are complex and controversial issues on which citizens are called to decide upon together with policy makers, stakeholders and the scientific community (see, e.g., climate change, public health, etc.). The scientific community must find ways to communicate with all members of society because their emotions and knowledge have a say in the governance of science and technology. Young people are the adults of tomorrow, and it is necessary to build a new and more aware concept of citizenship.

Support recruitment. Communicating science is also necessary to create a positive image of scientists as professionals, to attract new generations of researchers.

Foster information and education. Providing information on current scientific research, but also providing a scientific perspective on the news, and contributing to scientific education of the young are the most universally known goals of science communication. In addition, education is not just about knowledge transfer, but also about the construction of a scientific citizenship able to raise awareness on the importance of engaging in behaviour, both public and private, of sustainable progress and of respect for the environment.

Fight prejudices and change stereotypes. Scientists are usually imagined and drawn by children and pupils as crazy, often old, men who manipulate dangerous chemical substances which easily explode. Sometimes scientists are considered good, in some cases even superheroes, but sometimes they are perceived as evil characters. The direct contact with real scientists during SISSA for schools aims at changing this stereotypical image: after the visit children know that scientists are both males and females, they can be young, they are friendly, quite "normal" (as everybody) and not crazy. Most of them do not use chemicals, but numbers, graphs, models and computers during their daily routines.

Inclusion. The programme aims at facilitating the encounters of all young people with the world of research. For this reason the programme is free of charge and participants are full classes and not individual children enrolled by parents, so to level out the bias that may be due to different social contexts.

Promote a sense of ownership for science-related places such as universities and research institutes. Children and young people sometimes feel far away from universities and museums, as places to which they do not belong. They feel like such places are dedicated to expert adults and possibly the ones closed to them (e.g. their families and friends). With this programme SISSA desires to be perceived as a welcoming and open institution for all.

Summarising all these objectives in a mission, S4S mission is to **support the development of a scientific citizenship for all**, not just to promote scientific careers among young children.

We present science as a vital, useful, beautiful human activity, made by many passionate, intelligent, professional young women and men coming from many different countries. And a fundamental and powerful tool for a socially and environmentally sustainable development.

2. SISSA FOR SCHOOLS AND ITS SPIN-OFFS

In the tenth year of activity of the programme, we expanded the Thursday visits to accommodate, in some cases, double classes. Moreover we added three other spin-offs to the traditional programme, all still completely free of charge for participating students and schools.

The S4S programme would not be possible without the collaboration of many PhD students, post-docs, administrative and technical staff and senior scientists. About 50 of them collaborated as guides, speakers and explainers in the 2022-2023 school visits activities.

We will now describe in more details the activities realised during the school year 2022-23.

2.1 Thursday's school visits

As usual, all available Thursday mornings from 13 October 2022 to 25 May 2022 were dedicated to school activities.

We generally accommodated one school class per Thursday morning, to ensure a deep exchange between pupils and volunteers during activities. This year, for some junior high schools and high schools, we allowed two classes of the same school level to visit together, so as to expand the reach of the programme. On these occasions, we proposed to the two classes the same activities but in a reverse order, keeping them separated. In fact, it was essential for us to keep interactivity and reciprocal knowledge with researchers as high as possible, which is only possible by working with small, class-sized groups.

We offered a free one-way shuttle to all classes, often leaving straight in front of their schools, in order to avoid congesting public transportation to SISSA, which is already very busy in the morning hours. Instead, classes were encouraged to use public transportation when they had to return to school at the end of the morning.

The registration procedure took place in June 2022 and was advertised via the [SISSA for Schools newsletter](#) and via social media. We received 90 requests for 24 available Thursdays. The slots were filled within a few minutes after the opening of the call: requests are much higher than our possibility to fulfil them. We accepted classes from different schools and grades, from primary to high school. The selection was made based on the time of booking, but also considering other aspects: previous participation by the same classes (priority was given to pupils who have never taken part in the visits), a balanced participation of different school-types, grades, and geographical regions.

Pupils of all ages took part in the Thursday programme, from young children in their third year of primary school to pupils attending the last year of high school, and even a group from the University of the Third Age. In particular, this year we hosted: 9 primary school classes, 12 junior high school classes, and 9 high school classes, plus a group from the University of the Third Age (see Tab. 1). Around 50 volunteers collaborated on the Thursday programme. S4S young visitors belonged to schools from Trieste, or from the Friuli Venezia Giulia region (Udine, Fogliano Redipuglia, Mortegliano) or even from out of the region (Modena, Brescia).

Visits' programme

The visit schedule was as follows:

- A. Welcome at the SISSA gate and walk to the main entrance with a first overview of SISSA's campus.
- B. Introduction to SISSA and its community in the Big Meeting Room (when available), the most prestigious room of SISSA with a wonderful view of the city and the sea. The introduction included

a welcome video of the SISSA Director, Prof. Andrea Romanino, and a quick presentation of the programme.

- C. Interactive activity/seminar proposed by a SISSA volunteer.
- D. Snack-break in the garden with playful experiences from optical illusions to sound games or, if bad weather, in the canteen.
- E. Escape game (for primary and junior high schools) or SISSA tour with PhD students (for high schools).
- F. Feedback time and closure

When hosting two classes, they were split after part B: while one class had part C, the other in parallel had part E, with exchange after the break to meet again during part F. In this way, we allowed both classes to experience the same programme, keeping the more interactive parts in a group the size of one class. This made it possible to keep the quality of the meetings high, fostering a mutual personal knowledge between pupils and researchers as much as with single-class meetings. Of course, this implied a more complex management of the meeting, a higher number of mediators from SISSA Medialab and a longer commitment for the volunteers, who repeated their contribution twice in a morning instead of once.

The Escape Game

Main purpose of the game is to allow pupils to get around SISSA in small groups and discover the research centre in wider autonomy. Each small group is accompanied by a researcher or a SISSA Medialab helper and gets in touch with a variety of actors in the research centre community, also discovering a few key places (library, canteen, the corridor of the universe at the 6° floor).



Figure 1: Materials for the Escape Game used for primary and junior high school pupils.

The SISSA Escape Game was co-created with S4S volunteers in 2019: all volunteers were invited to take part in the process, and five of them actively participated in all stages of the game design and construction. SISSA Escape Game was proposed to both primary and junior high school classes in three versions, so as to adapt challenges to the different ages of the pupils. The game is generally enjoyed both by the volunteers and the school pupils, for whom it is often one of the most memorable parts of the visit.

The game tells the story of Lucia, a PhD student in biophysics who is about to lose all her data and research because her computer is overheating. She needs new fans and the pupils can help in the search.

3, 2, 1... a Caesar cipher to understand where to find a bag closed by two padlocks, one with a combination of three numbers and one with a key, and the envelope containing all the puzzles to solve to open it (Fig. 2). Offices, library, stairs, the exhibition on the sixth floor, the search for a scientist willing to help, the canteen: a physical path through SISSA implies the knowledge of its different departments, offices and people. Once they have recovered the correct combination and the key to open the bag, the group achieves the goal: a fan for Lucia and her thank-you note.

2.2 SISSA for Schools' spin-offs

“SISSA for Schools va in classe”

The programme “SISSA for Schools va in classe” (“SISSA for Schools goes to the classroom”) offers a series of meetings for secondary school students, aimed at encouraging encounters and dialogue with SISSA researchers. The programme falls within the framework of orientation to scientific careers and aims to present the variety of fields of scientific research, the scientific careers as well as the people who undertake them, with particular emphasis on highlighting the presence of women and the social role of science. The programme belongs to a national initiative that involves all Italian Universities and is funded by the Ministry of Education (Decreto Ministeriale n. 752 of the 30-06-2021).

A key feature of this spin-off of the S4S programme is its location: SISSA researchers travel to the schools participating in the programme. The aim is to reach schools and institutes that are generally less involved in "SISSA for Schools" activities, because they are located in areas of the Friuli Venezia Giulia Region far from Trieste, or because they are traditionally less interested in the orientation activities proposed by SISSA.

This first edition of "SISSA for Schools va in classe" started in May 2022, with the first pilot meeting in a scientific high school in Pordenone, and ended in November 2022, with the last meeting in a high school in Trieste. In total, it involved 14 classes of 4 different schools of the Friuli Venezia Giulia region.

“Un percorso nella ricerca contemporanea”

This brand-new programme offers orientation courses for high school students aimed at providing them a concrete and up-to-date understanding of scientific careers. These courses are specifically designed to stimulate curiosity and interest in scientific professions and highlight their significance for society; to introduce students to real-life career paths of researchers after their university degrees; to make the students reflect on the social and ethical implications of science. The programme belongs to a national initiative that involves all Italian Universities and is funded by the Ministry of Education (Decreto Ministeriale n. 934 of the 3 August 2022 and Decreto Direttoriale n.1452 of the 22 September 2022).

S4S courses are structured around three distinct thematic paths:

- a path dedicated to the discovery of scientific research, in which the classes visited SISSA and met male and female researchers, seeing concretely the places of research and the instruments used;
- a path dedicated to the exploration of the relationship between science and society, in which the pupils discussed some of the most complex issues of contemporary society;
- a path more closely related to the knowledge of the careers that can be undertaken with a STEM degree, to make them reflect on what their attitudes and priorities are for choosing a future occupation.

The project involved 3 high schools (1 Italian teaching language and 2 with Slovene teaching language, which is another of the official languages in the Trieste region), all of them located in Trieste. Two classes per school were involved, for a total of 6 classes and 76 students. A 15-hour orientation course was offered for each school divided into 5 meetings held between January and May. Of these, 4 meetings took place at the main SISSA school, while the final event took place at the Miramare campus, with the presence of all the schools.

Trieste Next

On Thursday 22 and Friday 23 September S4S offered three meetings with three secondary school classes as part of the local Science Festival Trieste Next.

The addressed topics were the signal from outer space and the differences between silicon and biological neural networks, and they were developed each by a pair of SISSA researchers.

Table 1. School visits 2022-2023 in numbers

School visits on Thursday	
Number of visits	22 (originally 24 but two cancelled because of unexpected contingencies)
Pupils	492
Schools	19
Classes	31
SISSA for Schools va in classe	
Number of visits	3
Pupils	244
Schools	3
Classes	12
Un percorso nella ricerca contemporanea	
Pupils	78
Schools	3
Classes	6
Number of hours per class	15
Trieste Next	
Pupils	50
Schools	3
Classes	3
Total number of pupils involved	864
SISSA volunteers involved	48

2.3 SISSA volunteers' recruitment and training

The school programme is strongly based on the active participation of SISSA PhD students and post-docs, but also of several senior researchers and technical staff. The interaction between SISSA volunteers and school pupils bring benefits to both sides, as visitors learn more about research as a profession and the research topics of SISSA scientists, while giving the latter the opportunity to improve their communication skills, as well as the satisfaction of sharing their passion with a curious audience.

In October, at the beginning of the school year, a first meeting was organised and advertised to all SISSA staff in a meeting attended by the SISSA's Director and SISSA Medialab staff. During the meeting Medialab's staff presented the S4S programme and some of the volunteers of the previous year shared their experience. Approximately 50 people took part in the meeting, in-person or online.

In the following months SISSA Medialab provided continuous organisational support, as well as professional assistance in preparing seminars, activities and supporting materials. **Free training modules in science communication** were also offered and attended on a voluntary basis.

The modules were scheduled as follows and involved a total of **24 SISSA researchers**:

- 15/09/2022 Exploring diversity, equity and inclusion, with Vanessa Mignan;
- 08/11/2022 Training to prepare a SISSA for Schools activity, with SISSA Medialab staff;
- 15/12/2022 An introduction to Tinkering, with Gianluca Carta, Giacomo Sanna.

NB: the workshops were held in English.

SISSA Medialab also provided a branded t-shirt to all volunteers. The t-shirt, identifying the S4S crew during the meetings, is also a valued sign of belonging and a nice souvenir to bring along at the end of the work period at SISSA.

2.4 Products

The S4S archive of activities is continuously increasing and in the future we plan to catalogue and organise in a more structured way the produced materials, such as powerpoint presentations, schemes for interactive seminars, simple experiments, demonstrations, etc.

For now, one can find in Appendix 3 the list of all seminar/activities divided by age-range and main discipline.

2.5 Main results

S4S and S4S – Digital Edition 2022-2023 confirmed the success of previous years. The format of activities as well as organisation features were very appreciated and the impact on participants, both pupils and volunteers, was explicitly mentioned as deep and memorable. See Section 3 for more details about the evaluation methodologies and results.

The activities of S4S are marked by their inclusive and participatory nature and are considered among international best practices.

In particular, on the 18th January 2023, S4S was mentioned among best practices in front of the Group of National Experts on Higher Education while launching a new OECD-EC project on Education and Innovation Policy Community, partly dedicated to how High Education can support the school systems in innovating methods and practices.

Locally, the experience of SISSA Medialab and S4S was also shared with the regional network of school heads and teachers in charge of the digital innovation in schools, during the conference “School plan 4.0: ideas and insights” held in Udine on 16th November 2022.

The success of S4S is due to many factors. First, to the consistency and strength of the message, and to the clear objectives that have been pursued since the beginning. Furthermore, the professionals who run the programme have developed specific skills that are almost unique in Italy and give a significant added value. Finally, the relationship of trust that has been built up over the years, both with internal volunteers and with teachers and educators.

We consider it very important that the volunteers, by integrating S4S activities, feel part of a community. It happens, for example, that volunteers who come more frequently also support, when necessary, the organisational part with sudden replacements or by offering to sustain individual children in case of specific needs.

One example of this commitment was this year the availability of the SISSA community to participate as translators/cultural mediators in the presence of children who had recently arrived in Italy and were not yet able to communicate in Italian. In many of these cases, we were able to find someone in SISSA who spoke their language and who spent some time translating for the child or, if he/she also did not know Italian, simply chatting, making him/her feel welcome and telling their story and experience. This community feeling is very important to us also because it reflects in the well-being of individual researchers, for feeling part of a larger context on which they also know they can rely in case of need for advice and support.

The support and commitment of the whole SISSA management and administrative department is crucial to the success of the programme and has never been refused.

3. EVALUATION

The evaluation of the main track of the S4S programme - the Thursday's visits - was performed collecting data from teachers, pupils and researchers through three main instruments:

1. Questionnaires for teachers, high school pupils and volunteers;
2. Free messages and drawings on post-it notes for primary school pupils;
3. Keyword annotation and drawings on a billboard for junior high school pupils.

The questionnaires included a series of open questions and a quantitative scoring system from 1 (lowest) to 4 (highest) on various aspects of the visits. The scores were:

- 1 = very bad
- 2 = not so good
- 3 = good
- 4 = very good

Qualitative considerations were collected from teachers and pupils directly during the visit or immediately after, and were always very positive, often enthusiastic.

The overall impression is that this experience has been on average very positive and the results of the questionnaires confirm a high level of satisfaction in teachers, pupils and SISSA volunteers.

The features that received the highest scores from the classes (teachers + students) are the interest in the covered topics and the skills and charisma of SISSA's volunteers. See details in next paragraphs.

3.1 S4S – Evaluation by the teachers

The questionnaire was sent through a Google form link to teachers at the end of each visit. 25 teachers answered for the 24 Thursday visits (there is often more than one teacher at a time, especially when more than one class is involved). The questionnaire included 10 questions divided in three sections: the first explored what were the objectives and the expected outcomes for the visit; the second was dedicated to assess the visit experience; the third asked for suggestions for future visits.

The full text of the questionnaire and the collection of responses to the open-ended questions are available in [APPENDIX 2](#).

3.1.1 Objectives and expected outcomes for the visit

Depending on the school grade, the teachers reported different learning objectives.

Most of the high school and some junior high school teachers expected student orientation, to support pupils' future career decisions. Often they also mentioned the desire to deepen some of the topics studied at school and to open a window into the world of research and postgraduate higher education.

Junior high school and primary school teachers mainly aimed at arousing enthusiasm about science and make their pupils familiar with the research institutes in their territory. Across all grades, teachers also expressed a desire to connect with researchers, learn about their working environment, and understand the scientific approach.

All the respondents found the visit very relevant to their initial objectives and expected outcomes with an average vote of 3.8 out of 4.

3.1.2 Visit experience

All the teachers were very satisfied with the visit in terms of interest, enjoyment, and interactivity. The grades were very high, with an average above 3.6 out of 4. In particular, they appreciated the direct interaction with PhD students and researchers, which they found pleasant and informative, and the welcoming environment. According to the teachers, the pupils mostly liked the interactive activities and the escape game. The overall organisation of the day, both before and during the event, was also greatly appreciated.

“Attività molto interessante e coinvolgente con la giusta alternanza tra momenti di spiegazione e momenti ludici-ricreativi.”
(Primary school teacher)

The visit was considered overall well-organised and appropriate for the age of the pupils:

“L’organizzazione della visita e gli argomenti trattati sono stati generali e completi dando così effettivamente l’idea di cosa sia sissa world e di cosa sissa si occupa, dandone la giusta collocazione nel percorso didattico e anche lavorativo.”
(Junior high school teacher)

Nevertheless, a few teachers were not completely satisfied with the limited access rate to the programme due to the limited number of slots available during the year. A teacher suggested allowing each small group of pupils to talk to all volunteers and not only to the one appointed to this particular small group. Another suggested a parallel tour of the school premises also for teachers.

3.1.3 Suggestions and preferences for future visits

Many respondents used this section to compliment the initiative and thank the organisation. Many of them also expressed the desire to include other classes in future programmes.

High school teachers confirmed that on average their students would be able to participate in activities held in English.

Those teachers who engaged with two classes reported a positive experience. They viewed it as a valuable opportunity for the school. For high schools coming from other regions, this also allowed sharing the cost of the school journey shared among more individuals. Moreover, it helped teachers who manage two classes in parallel because they could involve both classes simultaneously. Some of the respondents, on the contrary, wished to participate in interactive activities with less pupils.

One teacher also suggested that it would be very useful to keep some connections between researchers and classes that could last throughout the year.

3.2 Evaluation by the pupils

3.2.1 Evaluation by the pupils: primary schools

The primary school evaluation was conducted with free messages and drawings on post-its to understand what impressed the children during the day. At the end of the visit, we allowed some time to make a drawing and we collected them directly. We also gave children the possibility to prepare and deliver the messages/drawings to one (or more) of the volunteers who welcomed them during the visit. This very special sign of gratitude is much appreciated by volunteers and they are often surprised and happy to take the drawings with them and hang them in their offices.

Two examples of drawings and messages received from primary school children follows below.



Figure 2: At the top of the sheet the pupil has written his/her name using the genetic code learnt during the activity. The other written text are messages of gratitude and appreciation.



È stato tutto bello e spero di
 venirci per un'altra occasione

Figure 3: The pupil, using post-it, has reproduced the S4S logo. She also expressed the desire to come back to SISSA another time.

3.2.2 Evaluation by the pupils: junior high schools

For the junior high school evaluation, at the end of the visit we placed a large sheet of paper, where pupils could write some keywords to describe what struck them during the visit. The aim of the evaluation was to understand what was more memorable, and if some new concepts / new words appeared. Many of the keywords referred to scientific concepts, escape game, names of SISSA volunteers and feelings about the experience.



Figure 4: A billboard with keywords and drawings on the escape game (library, drawings of fans, the code to open the bag), scientific concepts (universe, neuroscience, brain, neuropsychiatry) and feelings (exciting, enlightening).

3.2.3 Evaluation by the pupils: high schools

The questionnaire was a Google form, whose link was either shared with the students at the end of each visit or sent out to the teacher who was in charge to forward it to the students. 9 high school classes have participated in the programme; 95 pupils answered the questionnaire out of 154 pupils involved in the visits. The questionnaire included 8 questions divided in two sections: the first was dedicated to assess the visit experience; the second asked for suggestions and preferences for future visits. The full text of the questionnaire and the collection of responses to the open-ended questions are available in [APPENDIX 2](#).

In general, most of the students were satisfied with the visit experience (see Figure 5). They found it interesting, pretty enjoyable, and they learned new things. However, approximately one-third of the pupils felt it didn't significantly increase their desire to learn more about science.

What they appreciated the most was the interaction and exchange with PhD students and researchers, their enthusiasm and charisma. The presentations were well-received although some students felt that a few of them were too long and challenging to follow, especially when delivered in English.

The tour of SISSA, accompanied in small groups by S4S volunteers, received positive feedback from most participants. They enjoyed the international atmosphere and appreciated the chance to experience the daily

lives of researchers. However, some students felt that the visit was too short, and in certain cases, there was an excessive focus on a single PhD experience and office. Some of the students who had the occasion to visit the laboratory, considered it the best part of the visit. Few of them wanted to see more than one lab and felt the visit as too short.

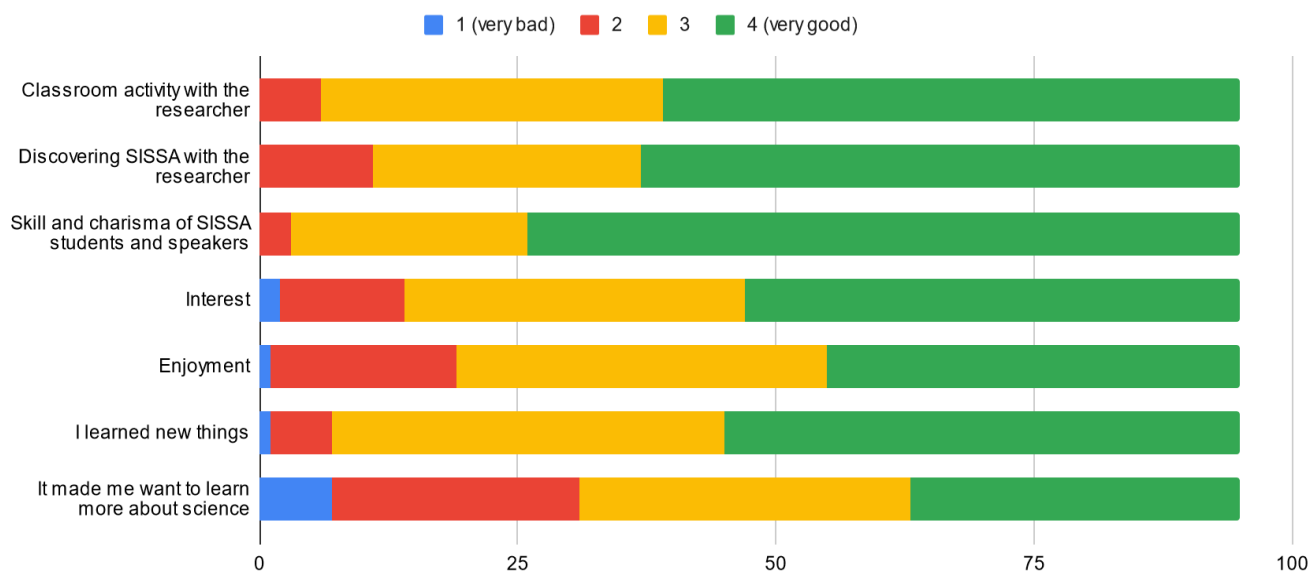


Figure 5: Results of the high school students evaluation (N=95).

65 out of 94 respondents would like to repeat the experience with other researchers, while 28 stated that their interest in doing so depends on the topic. Only one respondent showed no interest in repeating the experience. Regarding the language preferences, the majority of them (72 out of 95) feels comfortable having the visit in English.

Although the students were generally satisfied by the visit, few of them recommended a more in depth visit to the SISSA building and community, and more time to spend in the laboratories.

3.3 S4S – Evaluation by SISSA volunteers

The evaluation from the point of view of SISSA volunteers was carried out via a Google form sent to the volunteers who participated as speakers or helpers in the Thursday’s activities of S4S in 2022-23. We received answers from 15 out of 46 volunteers involved in the programme. The questionnaire was divided in three parts: a first section on volunteers personal experience, a second on the free training offered and a final section for suggestions for future visits.

The full text of the questionnaire and the collection of responses to the open-ended questions are available in [APPENDIX 2](#).

3.3.1 Volunteers personal experiences

The volunteers particularly appreciated the interaction with the pupils, their curiosity and excitement about the visit. They enjoyed the opportunity to share their personal working experience and to give the students direct contact with the research environment.

For some of the speakers was also an occasion to reflect on their activity and how to better communicate with different publics:

“On a personal level, I greatly appreciated the opportunity to dedicate some time to reflect on what aspect of my research activity would be more interesting to share with a school audience, and how

to do this effectively. In this regard, the brainstorming sessions and feedback from the S4S team was quite helpful. I also personally enjoy sharing my enthusiasm for the scientific process, hopefully in a way which wasn't too overwhelming.” (SISSA researcher)

When asked to report problems or difficulties, many volunteers say that they did not find any. Two of them felt disappointed when some students showed a lack of interest in the activities and faced challenges in interacting with pupils due to group dynamics, but one of them adds that *“it happened very seldom”*. A few of them report that the escape game didn't engage certain age groups, especially junior high school students. One volunteer commented that he could not find enough time for the programme, due to demanding requirements of PhD (*“Not really a problem of the programme, but sometimes the PhD requires a lot of time and an additional commitment like S4S might be difficult to fit it.”*).

Overall the volunteers felt enriched from the involvement in the programme, because they improved their science communication skills and learnt how to communicate effectively:

“I learnt how to communicate effectively with school kids, especially how to talk with them about science without having it sound boring and distant to them.” (SISSA researcher)

Some volunteers after the involvement in their programme were also more motivated and more productive in their research:

“Unless my schedule is really too full, participating always lightens up my mood and brings new ideas and motivation for my research.” (SISSA Researcher)

The volunteers perceived that the pupils had taken back home interest and enthusiasm for science, along with a better understanding of how science works. They feel that pupils also had the opportunity to witness that research as something not distant but on the contrary a very concrete activity made by passionate young people. Furthermore, participants understand that science is an inclusive endeavour, and that they can one day become themselves members of the scientific community.

The volunteers were also asked to discuss their experience during the Thursday visits with two classes in parallel: a novelty of this school year which implied a longer availability for them. Those who took part in these events were asked to rate from 1 to 5 how heavy it was to give a seminar twice/guide them in groups twice on the same morning. The answers, very distributed, can be found in figure 6, therefore not giving a clear advice on the acceptability of this new feature. Out of the nine respondents four said that they would be available to repeat it, and 4 that they would be available to repeat it if necessary. Only one said that (s)he was not available to repeat it.

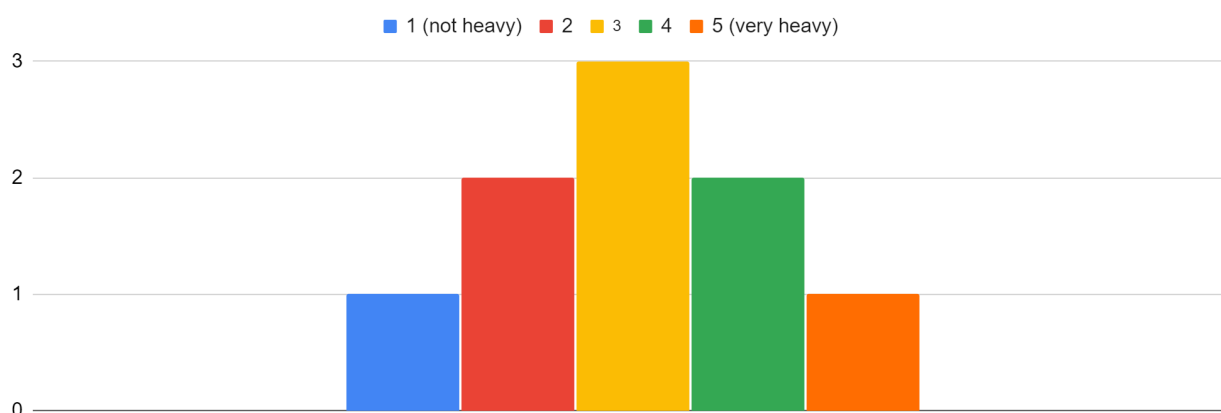


Figure 6: Volunteers' evaluation: histogram of the answer to the question "If you participated in one of the 'double' Thursdays, how heavy was it to give a seminar twice/guide them in groups twice on the same morning? Please rate from 1 (not heavy) to 5 (very heavy)".

3.3.2 Participation in science communication training

As mentioned in section 2.3, some of the volunteers participated in the free science communication workshops offered by the programme. 8 respondents have taken part in at least one of the training modules offered in 2022. The respondents found the training helpful and useful for participating in the programme. They also expressed that the training activities were enjoyable and interesting.

A significant number of respondents (8 out of 15) expressed interest in participating in other training workshops and 6 out of 15 stated that they may be interested. Specifically, 10 out of 15 respondents were interested in the basics of science communication, and 8 out of 15 were keen on learning how to interact with media and know more about public perception of science. 7 out of 15 were interested in practical exercises focused on the participation in S4S and only 4 of them were interested in how the media works.

Regarding the format of the workshops, most volunteers prefer in-person sessions, with options such as half-day workshops, possibly in the afternoon, held once a month or intensive workshops lasting a couple of days within the same week.

3.3.3 Suggestions for future visits

The only two suggestions revolved around the escape game, which in one case was perceived as more of a race by the pupils and thus wasn't instructive enough. One volunteer recommended designing small experiments that pupils can conduct under supervision. Another volunteer suggested replacing the escape game with a different activity for junior high schools.

According to these feedbacks and the observations along the year, Medialab's team is working to modify the structure of the visit for the final years of junior high schools for next year's programme.

4. GENDER BALANCE

A key goal for scientific outreach, and thus for the S4S programme, is to promote gender equality and inclusion in scientific research, where women and minorities are traditionally less represented, attracting more girls to science and technology studies. Therefore, a specific effort has been carried out since the origin of SISSA for Schools in presenting scientists in the least stereotypical way possible. Facilitators take great care to use gender-neutral and inclusive language and pictures when presenting scientists and scientific careers and to favour a diverse community of volunteers.

Although no formal measures have been applied to force a precise balance, in order not to limit volunteer's freedom to be involved according to their personal desires and constraints, the inclusiveness of the community has so far ensured a very **good level of gender** balance (see paragraph 4.1).

This is very impressive because volunteers mostly belong to SISSA's research community, which is heavily biased: women are only 12% among professors and researchers and 27% among students, according to the 2022 SISSA Gender Equality Plan.

4.1 Gender equality: numbers and participation

We analyse here the gender distribution in the most prominent role of SISSA for schools: speakers, those who give the major contribution to the school visits and accompany classes for a big part of the morning in SISSA.

We are going to analyse two quantities:

- the percentage of female speakers in the speaker pool. Repeated contributions from a single speaker will not affect this variable.
- the percentage of female speakers' contributions in the annual school visit calendar. In other words, this represents how often the speaker in front of a random pupil at S4S is a woman. Repeated contributions by a speaker will modify this variable.

% of female researchers in S4S: time evolution

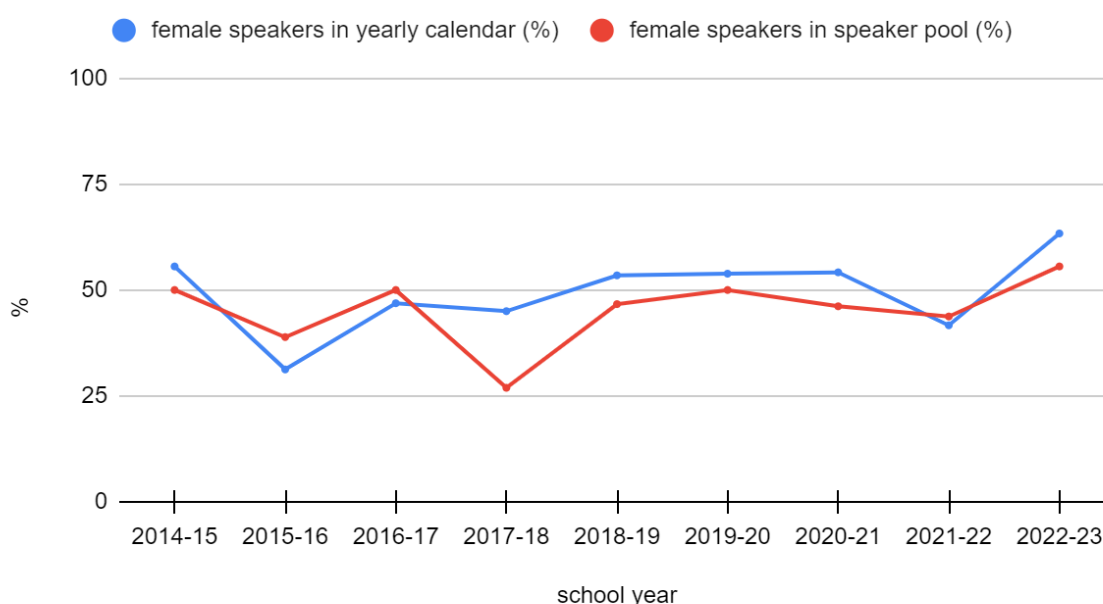


Figure 7: Percentage of female speakers in speaker pool (in red) and percentage of female speakers in the annual school visit calendar (in blue) for the programme SISSA for Schools between 2014 and 2023.

The former is a measure of gender equality in the volunteer pool, the latter quantifies how the “image” received by guest pupils is skewed toward one gender or the other. This last quantity is, then, the one which is of primary interest to impact on gender stereotypes on scientific careers.

We have studied the evolution of these quantities between 2014 and 2022: data are reported in Figure 7 and Table 2.

Table 2: Absolute numbers of speakers per gender in the annual school visit calendar and in the pool of speakers.

School year	Occurrence of female speakers in the annual school visit calendar	Occurrence of male speakers in the annual school visit calendar	Total female speakers	Total male speakers
2014-15	25	20	10	10
2015-16	15	33	7	11
2016-17	15	17	9	9
2017-18	18	22	7	19
2018-19	31	27	14	16
2019-20	14	12	9	9
2020-21	13	11	6	7
2021-22	10	14	7	9
2022-23	19	11	10	8

Figure 7 shows that, since the beginning of the programme and with general stability, participants to the S4S programme interact with speakers who are approximately 50% of the time male and 50% of the time female, with a single significant deviation in 2015-16.

Interestingly, over the past year the percentage of female speakers in the speaker pool has shifted slightly towards female researchers, despite the fact that they are in the clear minority at SISSA.

APPENDIXES

APPENDIX 1. SISSA FOR SCHOOLS CALENDAR 2022-2023

Date	School	City	Type of school	Class	Pupils	Title of the activity and speaker
OCTOBER 2022						
13	I.C. San Giovanni - Codermatz	Trieste	Junior high school	2A + 3A	38	Cos'è l'intelligenza? - Francesca Schönsberg
20	IC Valmaura - Rodari	Trieste	Primary school	3H	29	Se lo vedo, (non) ci credo - Maristella Lunardon
27	I.C. Dante - Dante Alighieri	Trieste	Junior high school	2F + 3F	42	La vita dei tuoi dati, la tua vita in dati - Roberto Trotta
NOVEMBER 2022						
10	IC Verni - Collodi	Fogliano Redipuglia	Primary school	3 A	14	Tassellazioni, la matematica sotto i vostri piedi - Giuseppe Orsatti
17	Liceo Copernico	Udine	High school	5B + 5C	39	Autoscontro di Buchi Neri - Mattia Mencagli
24	I.C. Dante - Dante Alighieri	Trieste	Junior high school	2B + 3B	32	Visita ai laboratori (Grandolfo, Lunardon, Pastore, Vlachouli, Zanon)
DECEMBER 2022						
1	Liceo Scientifico Calini	Brescia	High school	3F + 3I	31	Cognitive Biases: Why should we care more? - Anindita Basu
15	Università della terza età	Trieste			18	Onde, scafi e simulazioni - Andrea Mola
JANUARY 2023						
12	ISIS Carducci Dante	Trieste	High school	4 + 5 classi co	42	Visita ai laboratori (Grandolfo, Lunardon, Pastore, Vlachouli, Zanon)
19	IC Valmaura - Rodari	Trieste	Primary school	4 G	15	Superfici e bolle di sapone - Irene Anello
26	I.C. San Giovanni - Codermatz	Trieste	Junior high school	2D + 3D	38	Storia di un'apprendista astrofisica - Meriem Behiri
FEBRUARY 2023						
2	I.C. Roli - Giancarlo Roli	Trieste	Junior high school	3B	20	Buchi neri e dove trovarli - Mario Spera

9	IC Svevo - Lovisato	Trieste	Primary school	4D	20	Se lo vedo, (non) ci credo - Maristella Lunardon
MARCH 2023						
2	IC Roiano Gretta - Addobbati	Trieste	Junior high school	2 D	20	Alla scoperta dei batteri - Caterina Ciani
9	IC Valmaura - Foschiatti	Trieste	Primary school	3E + 3F	33	Se lo vedo, (non) ci credo - Maristella Lunardon
16	Liceo Sacro Cuore	Modena	High school	5A	22	Studying Nature from a Comfortable Sofa: Experimentation through Simulation - Carlos Mejuto Zaera
30	IC via Commerciale - Corsi	Trieste	Junior high school	2 B	21	Storia di un'apprendista astrofisica - Meriem Behiri
APRIL 2023						
20	ITS Alessandro Volta	Trieste	High school	4C + 4G	20	Cervelli a banda larga - Michele Giugliano
27	IC Mortegliano - Da Vinci	Mortegliano (UD)	Junior high school	3B	18	Alla scoperta dei batteri - Caterina Ciani
MAY 2023						
4	IC Roiano Gretta - Saba	Trieste	Primary school	3C	19	Superfici e bolle di sapone - Irene Anello
18	IC Roiano Gretta - Saba	Trieste	Primary school	5C	20	Tassellazioni, la matematica sotto i vostri piedi - Giuseppe Orsatti
25	IC S. Giovanni - Longo	Trieste	Primary school	3A	20	L'alfabeto delle proteine - Alessia Soldano

APPENDIX 2. EVALUATION QUESTIONNAIRES

EVALUATION QUESTIONNAIRE FOR TEACHERS

Dear teacher,

Thank you for participating in SISSA for Schools. We ask you just a few minutes of your time. We would like to know what you think about this activity. There is also a space for comments and suggestions that you can use to add something more personal. Thank you for your availability.

1. Which programme did you take part in?

- Primary school
- Junior high school
- High school

2. What were your educational objectives when you included the visit in the school programme?

3. Did the visit meet your expectations? (rate from 1 (at all) to 4 (completely) the relevance of the visit for your objectives)

4. Rate from 1 (very bad) to 4 (very good) the following aspects:

- Interest
- Enjoyment
- Appropriateness to the age and knowledge of the students
- Skill and charisma of the speakers
- Interactivity
- Organization of the activity

5. What was the best element?

6. What was the worst element?

7. Would you involve other classes in this in person version?

8. Do you think that your students could also take part in English visits?

9. Starting from this year, on some specific date, some schools were allowed to participate with two classes instead of one. If it was your case, and in the past years you attended the one class version, how do you evaluate the inclusion of the second class?

10. Suggestion and comments.

Thank you!

TEACHERS' OPEN ANSWERS

2. What were your educational objectives when you included the visit in the school programme?

- Incuriosire i ragazzi al mondo scientifico e universitario.
- Orientamento scolastico.
- Gli obiettivi erano due: informazioni sui più recenti ambiti di studio in matematica, fisica e neuroscienze e orientamento in uscita per gli studenti.

- Mettere gli studenti a contatto con la realtà della ricerca universitaria.
- Affrontare tematiche inerenti a quanto studiato in classe in modo più approfondito; conoscere le realtà scientifiche che lavorano nel nostro territorio.
- Orientamento.
- Orientamento.
- Esperienza laboratoriale e orientamento.
- Vedere dove e come lavorano degli scienziati.
- Educazione civica e scienze: conoscenza degli Istituti di ricerca del nostro territorio.
- Creare entusiasmo per la scienza e stimolarli a conoscere realtà diverse.
- Scienze: Galassie Stelle e Universo.
- Far conoscere ai ragazzi questo Istituto.
- Conoscere il metodo scientifico - Prendere contatto con gli "scienziati".
- Aprire una finestra sul mondo della ricerca e sull'istruzione superiore post laurea.
- PCTO: stimolo alla prosecuzione degli studi.
- Conoscenza territorio e delle realtà scientifiche / di ricerca. Comprendere che cosa significa fare ricerca e l'importanza dello studio. Aumentare la motivazione allo studio.
- Finalità principalmente di orientamento (volevo che i ragazzi avessero un esempio concreto di futuro in relazione all'ambito delle scienze) ma anche di riscontro dell'approccio scientifico.
- Orientamento e conoscenza di ambiente studio/lavoro.
- Fare conoscere un'importante realtà del territorio.
- Dimostrare, una volta in più, che si può imparare da tante esperienze diverse e che la matematica non è solo 2+2 ma che fa parte del mondo che ci circonda e può essere molto divertente.
- Far conoscere le realtà scientifiche del territorio.

5. What was the best element?

- La gentilezza.
- La disponibilità di dottorandi e ricercatori a parlare della propria esperienza personale.
- La possibilità per gli studenti di visitare il centro e fare domande ai giovani ricercatori.
- La preparazione e la disponibilità dei relatori.
- La visita ai laboratori.
- Ambiente e accoglienza. La conferenza.
- La conferenza di neuroscienza.
- I laboratori.
- Il laboratorio con le bolle e le superfici.
- Esperienza personale/educativa/professionale della ricercatrice raccontata ai ragazzi attraverso le slides.
- L'interattività con i ragazzi.
- Abbiamo apprezzato tutto. Molto interessante la lezione del prof Mario Spera sui buchi neri, anche per un'audience di 3 media.
- Tutto.
- La disponibilità, l'organizzazione e l'entusiasmo degli operatori.
- L'organizzazione della visita e gli argomenti trattati sono stati generali e completi dando così effettivamente l'idea di cosa sia sissa world e di cosa sissa si occupa, dandone la giusta collocazione nel percorso didattico e anche lavorativo.
- Tour della scuola.
- Relatori, puntualità, organizzazione.
- La conversazione con i ricercatori.
- ...Anche per averne parlato coi ragazzi, la seconda parte, che ha visto i ragazzi coinvolti in modo più attivo (caccia al tesoro). Mi hanno riferito che è stata la loro parte preferita. Ho apprezzato anche la parte introduttiva, con la panoramica sul percorso di studio, che io pensavo fosse chiara ai ragazzi e invece ho visto che se la sono chiarita ieri.
- La possibilità di provare a "coltivare" i batteri nella piastra e vedere il risultato a scuola.
- Il laboratorio con le bolle di sapone e la caccia al tesoro.
- L'attività concreta sulla tassellatura.
- L'organizzazione generale, dal trasporto alle attività.

6. What was the worst element?

- Non ci sono stati aspetti negativi.
- Il fatto che non fossero presenti ricercatori di matematica.
- Nulla.
- Il momento del pranzo.
- Il momento del pranzo.
- I colloqui con gli studenti di dottorato, forse si potrebbero far ruotare i gruppi in modo che ogni gruppetto parli con tutti gli studenti disponibili.
- La visita degli ambienti tramite caccia al tesoro (perché noi maestre non li abbiamo visitati).
- Niente.
- Nulla.
- Le modalità di accesso a tale iniziativa.
- Niente.
- Modulistica preliminare (liberatoria).
- Se devo cercare di dare un suggerimento, dico che con questa classe ho trovato che la mattinata sia completamente riuscita. Forse, se avessi accompagnato una classe meno "tranquilla", avrei preferito più tempo dedicato all'attività "sperimentale" e meno tempo di attività teorica. Ma anche questa è stata trattata molto bene.
- Nulla.

9. Starting from this year, on some specific date, some schools were allowed to participate with two classes instead of one. If it was your case, and in the past years you attended the one class version, how do you evaluate the inclusion of the second class?

- Dal punto di vista della scuola è un vantaggio, perché si possono dividere su più persone i costi del viaggio.
- Positivamente.
- Le mie classi erano poco numerose (15 alunni ciascuna) e le attività sono state svolte in modo ottimale.
- Valuto positivamente l'ampliamento a due classi in generale. L'attività laboratoriale invece sarebbe meglio effettuarla con un minor numero di studenti.
- Molto favorevole.
- Ho partecipato alla sola esperienza con due classi: molto positiva.
- Con due classi andava molto bene.
- Io valuto positivamente.
- Scuola secondaria di 1° grado.
- Un'ottima proposta: talvolta, come nel nostro caso, ci sono dei gemelli iscritti a sezioni diverse.
- Favorevolmente.
- Nel mio caso, insegnando solo su una classe, preferisco l'intervento singolo, ma trovo sia un'opportunità fantastica per quei docenti che insegnano su due classi parallele.

10. Suggestion and comments.

- Considerando la complessità degli argomenti, seppur spiegati molto bene e comprensibili per gli studenti, rende la visita molto adatta alle classi quarte e quinte delle superiori, che possono sentirsi più coinvolte anche nell'ottica di orientarsi nelle scelte future.
- Complimenti per l'organizzazione!
- L'apertura dei laboratori è stata un'esperienza molto utile per gli studenti, che raramente ne vedono uno.
- Grazie mille, bella ed utile esperienza per i ragazzi, ottima organizzazione.
- È un peccato che ci siano pochi posti all'anno. Per il resto, grazie e complimenti per queste iniziative.
- Continuate così, bravi!
- Dare la possibilità di partecipare a tutte le classi almeno una volta nei cinque anni.
- Sarebbe interessante anche uno scambio continuo tra qualche ricercatore e la classe.
- Attività molto interessante e coinvolgente con la giusta alternanza tra momenti di spiegazione e momenti ludici - ricreativi. Complimenti a tutti i relatori, agli organizzatori e alla professoressa Alessia che ha reso accessibili ai bambini argomenti tanto complessi.

EVALUATION QUESTIONNAIRE FOR HIGH SCHOOL PUPILS

Dear pupil,

Thank you for participating in SISSA for Schools. We ask you for a few minutes of your time. In fact, we would like to know what you think of the activity. There is also a space for comments and suggestions that you can use to add something more personal if you wish. Thank you for your time.

1. Name of the researcher who illustrated his/her research topic

2. Rate from 1 (very bad) to 4 (very good) the following aspects:

- Classroom activity with the researcher
- Discovering SISSA with the researcher
- Skill and charisma of SISSA students and speakers
- Interest
- Enjoyment
- I learned new things
- It made me want to learn more about science

3. What was the thing you liked the most?

4. What was the thing you liked the least?

5. Would you like to repeat this experience with other researchers?

6. Are you willing to participate in meetings in English?

7. Suggestion and comments.

Thank you!

HIGH SCHOOL PUPILS' OPEN ANSWERS

3. What was the thing you liked the most?

- La lezione sui buchi neri.
- Parlare con i dottorandi.
- Interazione con i ricercatori.
- Avvicinarsi al mondo della ricerca vedendolo dall'interno.
- Confrontarsi con i ricercatori.
- Confrontarsi con ricercatori.
- Tutto.
- Approfondire le neuroscienze con Caterina.
- La relazione finale.
- La lezione sui buchi neri.
- Il bar.
- Ristorante.
- Visita alla scoperta della SISSA.
- Mattia.
- Vista all'interno della struttura.
- I divanetti.
- Avere la possibilità di parlare con i ricercatori anche in ottica di orientamento per l'università.
- La conversazione con gli studenti.

- L'ambiente internazionale e la passione dei ricercatori e ricercatrici.
- La conferenza di Anindita Basu.
- Gli esempi dei diversi tipi di biases.
- Il tour della SISSA.
- Vedere come le biases cognitive influenzano il lavoro dei ricercatori.
- Conferenza sui bias.
- La presentazione sui bias cognitivi.
- Mi è piaciuto di più girare la SISSA.
- Tour della SISSA.
- Presentazione di neuroscienza.
- Seminario.
- Visita della sissa.
- La conferenza.
- Il tour.
- Parlare con i ricercatori.
- La conferenza.
- La conferenza.
- Il giro per la struttura.
- La conferenza della ricercatrice.
- La visita guidata del luogo.
- Il giro della sissa.
- Fisica statistica.
- Disponibilità della ricercatrice.
- Il laboratorio e vedere le culture delle cellule.
- Esperimento TMS.
- Risonanza magnetica TMS.
- Le coltivazioni in vitro al microscopio.
- Visita della struttura.
- Esperienze dei dottorandi.
- La possibilità di poter interagire molto con i ricercatori.
- Vedere uno spezzato dell'ogni giorno dei ricercatori.
- Laboratorio.
- Il laboratorio.
- La visita con Cristiano.
- Il balcone.
- La presentazione di Carlos.
- Giro.
- Giro per visitare il parco.
- Unione di campi fisici diversi.
- Lezione in aula.
- Scoprire questo campo della fisica che non conoscevo ed anche che si possono unire campi che apparentemente sembrano diversissimi. Che alcune cose siano state spiegate in inglese.
- Il fatto che se sei stanco puoi andare a casa e prenderti un giorno di riposo.
- Il percorso con la persona specializzata (Massimo).
- Gli ambienti e la spiegazione iniziale di Carlos.
- Approccio presentato al mondo della ricerca.
- Attività con ricercatore alla scoperta di Sissa.
- Il vedere come la fisica abbia influenze sulla vita di tutti i giorni, ad esempio trovare modelli fisici che abbiamo un collegamento con la medicina, con lo studio dei materiali.
- Brutale onestà.
- Laboratorio dei moscerini.
- La visita dei laboratori.
- In realtà tutto.
- Incubazione delle mosche.
- Neurologo.
- Laboratorio neuroscienza.

- I moscerini.
- Laboratorio di neurologia.
- Laboratorio di Michele.
- Il laboratorio per lo studio delle reti neurali.

4. What was the thing you liked the least?

- Il bar.
- Stare tanto tempo in piedi.
- Il tempo atmosferico.
- Nulla.
- Nulla in particolare.
- L'ambiente architettonico.
- Nulla.
- I colleghi socialisti di Cristiano.
- Gli argomenti.
- Le scale.
- Lezione sui buchi neri.
- Sarebbe stato interessante fare una visita più lunga.
- Il fatto che la conferenza fosse in inglese ha richiesto molto impegno nel capire tutte le parole.
- Niente.
- Il pranzo.
- Il pranzo.
- Il fatto che il workshop era in inglese.
- Merenda fuori.
- La merenda fuori.
- ...
- Niente.
- La conferenza.
- Le scale.
- Niente.
- Niente.
- Niente in particolare.
- L'accoglienza.
- La durata della attività con la ricercatrice è stata troppo lunga.
- Nulla.
- La lezione in inglese.
- Non disponibilità del bar.
- Avrei voluto parlare con ricercatori stranieri.
- Parlare con più ricercatori da diversi background.
- La visita della struttura.
- I laboratori.
- Nulla in particolare.
- Non poter svolgere più di un laboratorio (per ovvia impossibilità di tempo).
- Fisica.
- La scarsa durata dei laboratori, l'impossibilità di farne più di uno.
- La visita all'interno dello stabilimento della Sissa: era un po' scarna.
- Nulla.
- Nessuna.
- Niente.
- Concentrarmi per capire l'inglese.
- Mi è piaciuto tutto.
- Mi è piaciuto tutto.
- Niente.
- Mi è piaciuto tutto.
- Nessuna, mi è piaciuto tutto.
- Non aver visto di più.

- Niente.
- Non ho da segnalare niente che non mi sia piaciuta.
- Il tempo atmosferico.
- Mi è piaciuto tutto.
- Fluidi e vortici.
- Laboratorio mosche.
- Pioggia.
- Moscerini.

7. Suggestion and comments.

- Approfondire aspetti economici.
- Evitabili discussioni sul socialismo.
- No.
- Mi sarebbe piaciuto vedere meglio i laboratori.
- Niente.
- Grazie per la vostra disponibilità, suggerirei solo nella seconda parte di tenersi più generali e non soffermarsi troppo sugli studi specifici dei singoli dottorandi.
- Consiglierei più efficienza nella perlustrazione dell'edificio. Ho trovato un po' superfluo un intervento così duraturo in un singolo ufficio; sarebbe stato più efficace entrare meno nello specifico del ruolo di un singolo dottorando, cercando piuttosto di interfacciare ciascuna guida con i diversi gruppi, attraverso intervalli di tempo minori, in modo da vedere più cose (vedere tre uffici dedicando a ciascuno 10-15 minuti). Nonostante ciò ho molto apprezzato l'esperienza in laboratorio; inoltre ho gradito la grande disponibilità, voglia di comunicare e simpatia dei due dottorandi nella visita per la SISSA. Non prendendosi troppo sul serio e non peccando di superbia, ma anzi, essendo ben disposti, pazienti e minuziosi sono riusciti ad avvicinarmi ad una materia che personalmente non mi attrae. (Anche se devo ancora ben capire la storia del gatto chiuso nella scatola!!)
- Se possibile, i dottorandi che accompagnano gli studenti in giro per la Sissa dovrebbero essere un po' più sciolti nel parlare ed organizzare meglio la visita, facendo sì che i ragazzi abbiano la possibilità di vedere più postazioni della Sissa per poter instaurare dialoghi anche con altre persone e scoprire i diversi aspetti delle varie discipline affrontate nel luogo.
- Fare una parte dove si prova a fare cose in laboratorio.
- Consiglio visite a tre anziché due laboratori.
- Più tempo per girare nei laboratori.
- Non farci accompagnare da personale non autorizzato ad accedere in determinate aree da visitare.

EVALUATION QUESTIONNAIRE FOR VOLUNTEERS

Please, take a few minutes to let us know what worked and what didn't during this year of SISSA for Schools.

This evaluation form regards the Thursday morning activities, and not other parallel programmes.
Thank you!

1. What was/were your role/s in the 2022-23 edition? (you can check more than one box)

- Speaker in a seminar/activity in one or more Thursday meetings
- Helper (guide in the escape game or in small group visits) during in person Thursday meetings

General evaluation

2. Considering your personal experience, what was the best element of the S4S programme?

3. Considering your personal experience, what was the worst element of the S4S programme?

4. Is there something that you learnt from this experience?
5. In your opinion, what brought the children/teens home from their visit?
6. In some Thursdays we hosted two instead of one class. If you participated in one of these 'double' Thursdays, how heavy was to give a seminar twice/guide them in groups twice on the same morning? Please rate from 1 (not heavy) to 5 (very heavy):
7. If you participated in one of these 'double' Thursdays, would you be available to repeat it, considering that this allows many more pupils to participate?

Free training in science communication for SISSA for Schools volunteers

8. If you participated in some of the trainings in science communication offered to SISSA for Schools volunteers, please indicate which ones:
9. If you participated, please rate the following aspects of the courses from 1 (not much) to 5 (very much)
 - It helped to improve my participation in SISSA for Schools
 - It helped in general to improve my communication skills
 - It was interesting
 - I will use what I learnt
 - I had fun
 - It helped to better understand the social value of my research
10. Would you like to participate to other training workshops in science communication?
11. What element would you like to find in a free training workshop linked to SISSA for Schools?
12. When and how would you prefer the training to be provided? (please, select all the valid options)

Final suggestions

13. Please add any other comment useful to plan next year of SISSA for Schools and the related training.

VOLUNTEERS' OPEN ANSWERS

2. Considering your personal experience, what was the best element of the S4S programme?

- On a personal level, I greatly appreciated the opportunity to dedicate some time to reflect on what aspect of my research activity would be more interesting to share with a school audience, and how to do this effectively. In this regard, the brainstorming sessions and feedback from the S4S team was quite helpful. I also personally enjoy sharing my enthusiasm for the scientific process, hopefully in a way which wasn't too overwhelming.
- Getting in touch with young students with their curiosity.
- In general, the positive energy and excitement that school students bring to SISSA.
- I did activities just with elementary school kids, and with them the best element was the treasure hunt since they always all got involved in that and learned a lot of new things, though also during some talks they were really engaged (the soap bubbles one in particular).

- Showing to school kids what it's like to be a researcher at SISSA and what a regular day at SISSA looks like.
- enthusiasm of the organizers.
- The freedom of the volunteers to share their lives.
- The possibility to speak with younger generations about science and people who do science.
- The seminar.
- Get in touch with pupils and kids and share with them your personal working experience as a researcher.
- The interaction with pupils.
- The possibility for children to have a direct contact with researchers and the research environment.
- The opportunity to bring young people in contact with the world of research.
- I have assisted at the talk, game and final gatherings. All seem well organised and carried out.

3. Considering your personal experience, what was the worst element of the S4S programme?

- I cannot think of anything significant which falls upon the S4S programme responsibility. Maybe there is a stronger sense of duty to protect the visiting students from feeling questioned than I feel is really necessary, but I acknowledge their more extensive expertise on the matter. On my end, I would have liked to make my presentation less of a "presentation" and more of an engaging "activity", since it ended up being more of a lecture than anything else. I'll have to reflect on whether this can be done in a meaningful way without changing the topic and message.
- Not all students are interested in the activities, but that's not their fault.
- Not really a problem of the program, but sometimes the PhD requires a lot of time and an additional commitment like S4S might be difficult to fit it.
- The treasure hunt with middle school kids, we should maybe change it a bit or find something more engaging since they are often not really taking part to that (but maybe it is that age group that is a bit less involved in this kind of activities in general)
- I cannot find any worst element.
- NA
- The duration of their campus tour seemed very short.
- I think the treasure hunt's riddles can be improved
- It is a bit disappointing when you find classes where students are neither interested nor motivated, but it happens very seldom.
- The treasure hunt, children were almost always disappointed by the "treasure", said from the very beginning it was all fake (they're right), and moreover can be extremely difficult to manage them, maybe you don't even know their names, just know them on the spot and cannot capture their attention in any way. Plus, there can be delicate dynamics among the group.

4. Is there something that you learnt from this experience?

- I learned that 'legame' aren't lentils or chickpeas. Who would have thought? I also came out of this with a nice little trick to make a language barrier into more of a happy accident than an impediment (assuming a valid alternative communication channel, of course).
- Unless my schedule is really too full, participating always lightens up my mood and brings new ideas and motivation for my research.
- To communicate science in an easy way, this is the most enriching thing, which in my experience also fuels the need to do science in times when I feel less the drive.
- I learnt how to communicate effectively with school kids, especially how to talk with them about science without having it sound boring and distant to them.
- to look at science with the eyes of a newcomer, with wonder.
- Yes. It helped me to get better at science communication.
- I learned to express with simpler words what am I doing trying to pass difficult messages to people in an understandable way.
- I started to do outreach and I am sure I am learning a lot about how to talk about physics to the general audience.
- To make difficult topics easy.

5. In your opinion, what brought the children/teens home from their visit?

- Hopefully the notion that theoretical science is not about math, equations and calculations, but about simple concepts. Ideally, that describing/explaining natural phenomena with models can be a lot of fun, and personally rewarding.
- Some idea about how research on science works and what does it mean to be a scientist.
- That research is something real that can be associated with real places and real people, who (mostly) love what they do.
- That science is for everyone and also that we researchers are such as them so they can also do that one day.
- I think they saw that being a researcher at SISSA can be a fun experience, and that the research world is not as distant and untouchable as some of them might think.
- An experience they will remember.
- That SISSA is cool?
- Hopefully interest in science and research.
- I think the seminar is the best part of the visit, and the one from which they take home the most.
- They brought home our enthusiasm, being more aware of the role of the researchers (they can be also young people like them, going beyond the stereotype of old and maybe boring scientists).
- I hope they learnt antibiotics are not like candies.
- An idea of the life of a researcher.
- This was for 8 year olds. I think that more than anything else they appreciated the fact that they were taken seriously.

13. Please add any other comment useful to plan next year of SISSA for Schools and the related training.

- Thanks for your hard work! I think this is genuinely important.
- I believe the treasure hunt is fun for kids, but it's mostly perceived as a race and they don't learn much from it. In my opinion, we could design some practical activities (like small experiments to do themselves under supervision) that are equally fun and fascinating, but also instructive
- I would suggest to choose a type of activity different from the treasure hunt for middle school pupils
- Thanks for the work you do!

APPENDIX 3. ACTIVITIES PROPOSED FROM THE BEGINNING OF THE PROGRAMME

School level	Area	Topic	Speaker
PRIMARY SCHOOLS (listed according to school year)			
I and II school years	Neuroscience	<i>The chemical senses: smell and taste</i>	Simone Pifferi and Gianluca Pietra
I-V school years	Neuroscience	<i>Watch out your nose!</i>	Emilio Agostinelli and Domenico Guarascio
	Physics	<i>Riding the waves</i>	Adriano Amaricci
	Physics	<i>Science jumping</i>	Adriano Amaricci
	Physics	<i>Tasting a star</i>	Claudia Antolini
	Physics	<i>Universe: let's taste, smell, hear, watch and touch it</i>	Claudia Antolini
	Physics	<i>Cats: solid, liquid or gas?</i>	Matteo Becchi and Francesca Rizzato
	Neuroscience	<i>Unity makes...the brain</i>	Alessandra Capuozzo and Sara de Carlo
	Neuroscience	<i>How can the brain tell stories?</i>	Kristina Egumenovska e Davide Spalla
	Neuroscience	<i>A snack with the brain</i>	Micaela Grandolfo
	Neuroscience	<i>Science of colours and colours of science</i>	Sara Laporte
	Physics	<i>A cosmic fruit salad</i>	Claudia Mancuso
	Physics	<i>Being a computer</i>	Simone Notarnicola and Angelo Russomanno
	Neuroscience	<i>And you, do you use your nose?</i>	Valentina Parma
	Neuroscience	<i>What kind of cell I will be when I grow up?</i>	Wendy Tignani and Jessica Zucco
	Neuroscience	<i>Neurons' chats</i>	Wendy Tignani, Manuela Santo and Jessica Zucco
	Physics	<i>It's raining... stars!</i>	Alessandro Trani and Giuseppe Puglisi
	Neuroscience	<i>The brain and the reading of words</i>	Francesca Franzon

	Mathematics	<i>Do-Re-Mathematics: the sound of Geometry</i>	Maria Strazzullo
	Scientific method	<i>What is there inside the box?</i>	Francesca Rizzato
II-III school years	Neuroscience	<i>When ideas fight, the brain acts as referee</i>	Olga Puccioni
III-V school years	Mathematics	<i>Art, numbers and shapes: the golden ratio.</i>	Stefano Amato
	Mathematics	<i>How do mathematicians play?</i>	Stefano Amato e Lucia Tealdi
	Mathematics	<i>Surfaces and soap bubbles</i>	Irene Anello
	Physics	<i>Our ideas of the universe</i>	Carlo Baccigalupi, Rossella Aversa, Eolo Di Casola
	Biology	<i>Alla scoperta dei batteri</i>	Caterina Ciani
	Mathematics	<i>Counting using your finger to understand computers</i>	Barbara Fantechi
	Mathematics	<i>Tilings: math under your feet</i>	Giuseppe Orsatti
	Neuroscience	<i>How to trick the brain</i>	Olga Puccioni
	Neuroscience	<i>Brain? It's us...</i>	Olga Puccioni
	Neuroscience	<i>Which type of cells I'll be when I grow up</i>	Carmen Falcone & Simone Chiola
IV-V school years	Neuroscience	<i>If I see it I (don't) believe it</i>	Maristella Lunardon
	Physics	<i>Matryoshka universe</i>	Claudia Mancuso
	Physics	<i>Let's discover the universe</i>	Claudia Mancuso
	Neuroscience	<i>Let's move!</i>	Dario Olivieri
	Physics	<i>Where does the light fall? The mysterious black holes</i>	Costantino Pacilio
	Neuroscience	<i>Let's pass through the cells membrane</i>	Gianluca Pietra
	Neuroscience	<i>SENSing the world around us</i>	Simone Pifferi and Olga Puccioni

	Neuroscience and physics	<i>Bees, ants and informatics</i>	Sofia Rossi e Cristiano De Nobili
	Biology	<i>The protein alphabet</i>	Alessia Soldano
	Physics	<i>The fascinating mystery of black holes</i>	Mario Spera
	Physics	<i>Read and write...DNA</i>	Elena Tea Russo
	Mathematics	<i>Fractal is served!</i>	Lucia Tealdi
	Neuroscience	<i>The language of thought</i>	Mara de Rosa
JUNIOR HIGH SCHOOLS (listed according to first author)			
VI-VIII school years	Physics	<i>More is different!</i>	Adriano Amaricci
	Mathematics	<i>The seven bridges of Königsberg</i>	Francesca Arici
	Mathematics	<i>Teachers prefer Mathematics</i>	Francesca Arici and Lucia Tealdi
	Physics	<i>Signals from outer space</i>	Meriem Behiri
	Physics	<i>Story of an astrophysics apprentice</i>	Meriem Behiri
	Physics	<i>Quirks and strangenesses from quarks' world</i>	Alessio Belenchia
	Physics	<i>Space, Time and Light: how Einstein changed the world.</i>	Alessio Belenchia
	Physics	<i>Einstein and his space and time theory.</i>	Alessio Belenchia
	Neuroscience	<i>Myths about brain: true or false?</i>	Maria Bertuzzi
	Neuroscience	<i>Transcranial Magnetic Stimulation Laboratory</i>	Domenica Bueti
	Physics	<i>From where sky ends...</i>	Juan Manuels Carmona Loaiza
	Physics	<i>If you want to keep a secret... tell it to a black hole!</i>	Juan Manuels Carmona Loaiza
	Mathematics	<i>Music and waves</i>	Matteo Casati

	Science and society	<i>Discussion game: The future of science</i>	Simona Cerrato
	Science and society	<i>Discussion game: Do you want to know a secret?</i>	Simona Cerrato
	Neuroscience	<i>Music in the brain</i>	Silvia Corsini and Daniele Maraspin
	Mathematics	<i>Drawing with math</i>	Daniele Dimonte
	Neuroscience	<i>Brain's tricks</i>	Adina Drumea and Shima Talehy Moineddin
	Neuroscience	<i>Scientist for a day</i>	Adina Drumea
	Neuroscience	<i>Brain: still so much to discover</i>	Adina Drumea and Shima Talehy Moineddin
	Mathematics	<i>Quiz: The words of mathematics</i>	Barbara Fantechi
	Mathematics	<i>Quiz: How to build an IKEA wardrobe</i>	Barbara Fantechi
	Mathematics	<i>What modern mathematicians do</i>	Barbara Fantechi
	Neuroscience	<i>Cut and sew course with DNA.</i>	Jessica Franzot
	Neuroscience	<i>Neuroscience laboratories visit</i>	Micaela Grandolfo and Jessica Franzot
	Neuroscience	<i>Let's play with the light lightening up and down cells.</i>	Micaela Grandolfo
	Mathematics	<i>Profession: coach of micro swimmers</i>	Luca Heltai
	Mathematics	<i>Drawing numbers</i>	Ilaria Lucardesi
	Mathematics	<i>Nature save...</i>	Ilaria Lucardesi
	Scientific method	<i>A typical day in the world of research</i>	Uriel Luviano and Irene Adroher-Benítez
	Physics	<i>Science in your home</i>	Uriel Luviano and Irene Adroher-Benítez
	Physics	<i>Matryoshka Universe</i>	Claudia Mancuso
	Physics	<i>Spatial waves hunters</i>	Claudia Mancuso
	Biophysics	<i>Nuclear: a forbidden fruit</i>	Mattia Marena

	Physics	<i>Quantum race</i>	Oxana Mishina
	Mathematics	<i>The mathematic of Sphynx</i>	Lorenzo Nardini
	Physics	<i>The misunderstood universe</i>	Andrea Oddo
	Physics	<i>Space's Curiosities</i>	Andrea Oddo
	Neuroscience	<i>Let's move!</i>	Dario Olivieri
	Physics	<i>Einstein gravitational elevator</i>	Costantino Pacilio
	Neuroscience	<i>Smelling the danger</i>	Valentina Parma
	Neuroscience	<i>Virtual laboratory of cell cultures</i>	Beatrice Pastore
	Biophysics	<i>How to unroll the RNA and win tuberculosis C</i>	Andrea Perez
	Neuroscience	<i>Sensory extravagances. How the brain knows the external world</i>	Simone Pifferi
	Neuroscience	<i>Taste is not enough</i>	Simone Pifferi
	Neuroscience	<i>Optical illusions</i>	Olga Puccioni
	Physics	<i>Does the Universe trick us?</i>	Giuseppe Puglisi and Alessandro Trani
	Biophysics	<i>Magical chemistry</i>	Francesca Rizzato
	Scientific method	<i>What is there inside the box?</i>	Francesca Rizzato
	Computer science	<i>Let's take the computer apart!</i>	Francesca Rizzato, Andrea Papale and Elena Tea Russo
	Scientific method / physics	<i>Tinkering with catapults</i>	Francesca Rizzato
	Scientific method / physics	<i>Tinkering with cardboard automata</i>	Francesca Rizzato
	Neuroscience	<i>Dancing with bees</i>	Sofia Rossi e Cristiano De Nobili
	Neuroscience	<i>Let's make a neuron!</i>	Manuela Santo and Osvaldo Artimagella
	Physics	<i>Black holes and where to find them</i>	Mario Spera

	Physics	<i>Like raisins in panettone, or: how does a theory of the Universe work?</i>	Kevin Wolz
	Neuroscience	<i>Stem cells</i>	Manuela Santo, Wendy Tignani and Jessica Zucco
	Neuroscience	<i>EEG laboratory</i>	Tiziano Suran
	Mathematics	<i>Water, soap and minimal surfaces</i>	Lucia Tealdi
	Mathematics	<i>Fractal is served!</i>	Lucia Tealdi
	Neuroscience	<i>DNA laboratory</i>	Christina Vlachouli and Helena Krmac

HIGH SCHOOLS (listed according to area and surname of first author)

PHYSICS	<i>Quantum physics with the naked eye: from electrons to superconductivity</i>	Adriano Amaricci
	<i>More is different: short stories of collective phenomena</i>	Adriano Amaricci
	<i>Order from disorder</i>	Adriano Amaricci
	<i>Interdisciplinarity</i>	Daniele Amati
	<i>The blurred boundaries between scientific disciplines</i>	Daniele Amati
	<i>The dark engine of the universe</i>	Claudia Antolini
	<i>Gravitational waves from the Big Bang</i>	Carlo Baccigalupi
	<i>A selfie from the universe</i>	Carlo Baccigalupi
	<i>In search of ET: the exoplanets</i>	Carlo Baccigalupi
	<i>Deep Universe: from the first objects to the gateway to the Big Bang</i>	Carlo Baccigalupi
	<i>What is left from the Big Bang: the life of a cosmologist in the past, present and future</i>	Carlo Baccigalupi and Giuseppe Puglisi with Marzia Umani
	<i>What is the color of flowers through a silicon lens?</i>	Stefano Baroni
	<i>The paradox of medical tests: when statistics and intuition collide</i>	Matteo Becchi
	<i>Come to the dark side, we have galaxies</i>	Meriem Behiri
<i>Signals from the outer space</i>	Meriem Behiri and Giovanni Gandolfi	

<i>Space, Time and Light: how Einstein changed the world.</i>	Alessio Belenchia
<i>The (poor) Schrödinger's cat: oddities and curiosities from the quantum world</i>	Alessio Belenchia
<i>Space, time e Albert: 100 revolutionary years.</i>	Alessio Belenchia
<i>The history of the universe at a glance</i>	PhD students from the Astrophysics and cosmology and Astroparticle groups based on the exhibit at 6 th floor
<i>From Newton to strings in 30 minutes</i>	Matteo Bertolini
<i>Listening to the Universe with gravitational waves</i>	Lumen Boco and Beatrice Allegri
<i>The Saga of symmetries in physics</i>	Loriano Bonora
<i>The Universe and its symmetries</i>	Loriano Bonora
<i>Mistreating matter</i>	Massimo Capone
<i>Physics Superconductivity: will the super evil save the world?</i>	Massimo Capone
<i>Abused super-active: the surprising new superconductors and our future</i>	Massimo Capone
<i>Black holes and revelation</i>	Manuel Juan Carmona
<i>Who has ever seen a black hole? Who has fallen in it?</i>	Manuel Juan Carmona
<i>It is a complex world!</i>	Erika Coppola, Stefano Ruffo, Guido Sanguinetti, Donato Ramani
<i>There is no time, hurry up!</i>	Elena De Paoli
<i>Geometry is boring...for that it works!</i>	Eolo Di Casola
<i>Time machine: science or science fiction?</i>	Eolo Di Casola
<i>The Anthropic Principle</i>	Eolo Di Casola
<i>Ideas of space and time</i>	Eolo Di Casola
<i>Theory (and theories) of gravity, that is: story of a free falling</i>	Eolo Di Casola
<i>Detection of gravitational waves</i>	Eolo Di Casola

<i>There is a physicist, a mathematician and a gardener ... namely: tools to choose a good theory of gravitation</i>	Eolo Di Casola
<i>What are we looking for out there?</i>	Eolo Di Casola and Claudia Mancuso
<i>A space journey</i>	Chiara Di Paolo
<i>Buried in dust: encounters with distant worlds</i>	Darko Donevski
<i>Are galaxies socially distant?</i>	Darko Donevski
<i>Superconductors: will supervillains save the world?</i>	Laura Fanfarillo and Massimo Capone
<i>Discovering the quantum world: the tunnel effect</i>	Matteo Ferraretto
<i>Drunks and snakes: the strange world of simulations</i>	Thorben Fröhling, Matteo Becchi and Diego Doimo,
<i>The force of fluctuations</i>	Andrea Gambassi
<i>A journey into the dark universe</i>	Giovanni Gandolfi
<i>Quantum ne sai</i>	Giovanni Gandolfi, Mattia Mencagli and Kevin Wolz
<i>The Invisible Universe: from neutrinos to dark matter</i>	Josu Hernández García and Juan Herrero Garcia
<i>How can we see black holes</i>	Elias Kammoun
<i>Dialogue between the universe and the data</i>	Nicoletta Krachmalnicoff and Roberto Trotta, with Simona Cerrato, Luca Papapietro, Claudia Sciarna.
<i>Crystals: when the order is created by itself</i>	Sara Laporte
<i>Emmy Noether and her theorem: symmetries in physics</i>	Rodrigo de León Ardón
<i>Quantum entanglement for dummies</i>	Alessio Leroze and Paola Ruggiero
<i>When spacetime is dynamic: neutron stars, black holes and gravitational waves</i>	Stefano Liberati
<i>Black holes and other more extreme spaces explorations at the borders of Relativity</i>	Stefano Liberati
<i>Black holes, wormholes and time machines</i>	Stefano Liberati

<i>From the photon to the chemical bond: a path towards a sustainable future with the energy of the sun</i>	Stefano Fabris
<i>Between science and science fiction: wormholes, black holes and time travel</i>	Stefano Liberati with Elena Tomat and Irene Modolo
<i>What is the time?</i>	Stefano Liberati
<i>Looking for Schrödinger's cat</i>	Uriel Luviano
<i>Dust of galaxies</i>	Claudia Mancuso
<i>But... where do galaxies come from?</i>	Claudia Mancuso
<i>Small, skinny, and hyperactive: the galaxies of the main sequence</i>	Claudia Mancuso
<i>Galaxies: the islands of light in the universe</i>	Claudia Mancuso with Alberto Laratro and Giancarlo Cinini
<i>From laboratory experiments to virtual stimulation: physics meets biology to explain the world</i>	Mattia Marena with Monia Torre
<i>Matter, antimatter, dark matter: what is the Universe made of?</i>	Guido Martinelli
<i>Suspicious behavior in the elementary particle zoo</i>	David Marzocca
<i>The music of physics</i>	Uriel Luviano and the SISSA Choir
<i>LHC and Higgs Boson</i>	David Marzocca
<i>LHC: promises and discoveries</i>	David Marzocca
<i>Superconductivity and superfluidity: quantum effects to the naked eye</i>	Giacomo Mazza
<i>Towards a superintelligence: the possibilities and risks of developing AI</i>	Paolo Pietro Mazza
<i>Exploring a microscopic world: from polymers to quantum physics</i>	Paolo Pietro Mazza and Elena Tartaglia
<i>Fantastic black holes and how to find them</i>	Jacopo Mazza
<i>Studying nature from a comfortable sofa: experimentation through simulation</i>	Carlos Mejuto Zaera
<i>Bumper cars and black holes</i>	Mattia Mencagli
<i>Absolute zero</i>	Giuseppe Mussardo

<i>Simply chaos: can the unpredictable be measured?</i>	Simone Nortanicola and Angelo Russomanno
<i>Like black holes in the sky</i>	Andrea Oddo
<i>Science on the sofa: Was Einstein right? Relatively</i>	Andrea Oddo and Ruggero Rollini
<i>The black hole in the garden</i>	Costantino Pacilio
<i>A camera on the world's smallest slide</i>	Emanuele Panizon
<i>Ig-Nobel</i>	Emanuele Panizon and Laura Fanfarillo
<i>Microspheres learning</i>	Emanuele Panizon
<i>In the world of symmetries of Emmy Noether</i>	Roberto Percacci
<i>Quantum gravity: at the edge of space-time</i>	Roberto Percacci
<i>Artificial intelligence and animal behavior</i>	Alberto Pezzotta and Matteo Adorisio
<i>Self driven vehicle: science and ethics</i>	Federico Pigozzi
<i>With the right eyes</i>	Giuseppe Puglisi
<i>The greatest spectacle after the big bang</i>	Giuseppe Puglisi
<i>The search of extraterrestrials: evidence for and against the existence of aliens</i>	Giuseppe Puglisi and Alessandro Trani
<i>Mathematical models and fluid simulations: application to medicine, sport, environment and industry</i>	Giaanluigi Rozza
<i>Synchronization: why the heart cells beat in unison</i>	Stefano Ruffo
<i>Chaos and randomness</i>	Stefano Ruffo
<i>Synchronization: from the flashing of fireflies to parallel computing</i>	Stefano Ruffo
<i>The butterfly effect: sensitive dependence of the initial conditions</i>	Stefano Ruffo
<i>Geometric shapes' hunt</i>	Nicholas Rungi
<i>Colors in science</i>	Mariami Rusishvili and Sara Laporte
<i>Many balls in a quantum pinball machine: how to prevent it from crashing</i>	Angelo Russomanno

	<i>Chaos</i>	Angelo Russomanno
	<i>The dark matter awakens</i>	Paolo Salucci
	<i>The dark side of the Universe</i>	Paolo Salucci
	<i>From the reading of thought to the quantum mechanics</i>	Giuseppe Santoro
	<i>The unification of forces</i>	Marco Serone
	<i>Black holes and gravitational waves: what are they and why should we care?</i>	Mario Spera
	<i>Neutrino: elusive, evasive, and so fascinating</i>	Arsenii Titov with Sofia Rossi and Ilaria Gabbarrini
	<i>How many elementary particles are there? Ask Susy</i>	Lorenzo Ubaldi, Anna Greco and Laura Busato
	<i>Why 2 + 2 is not always 4: that is, interference phenomena between the classical and the quantum world</i>	Angelo Valli
	<i>Dark Energy and the accelerated expansion of the universe</i>	Kevin Wolz
PHYSICS AND NEUROSCIENCE	<i>The mysterious compass</i>	Beatrice Pastore, Alessandro Trani and Giuseppe Puglisi
		Beatrice Pastore, Costantino Pacilio and Riccardo Murgia
	<i>Time from the cosmos to the mind</i>	Domenica Bueti and Stefano Liberati
	<i>What is intelligence?</i>	Francesca Schönsberg
	<i>Differences between biological and artificial neural networks</i>	Francesca Schönsberg and Mattia Zanzi
BIOPHYSICS AND DATA SCIENCE	<i>What does my DNA have to do with a jar of yogurt?</i>	Irene Adroher - Benítez
	<i>Dear smart oven, but do you understand Italian?</i>	Giovanni Alzetta
	<i>Science on the sofa: how drugs are created</i>	Mattia Bernetti and Ruggero Rollini
	<i>Understand biology with molecular dynamics</i>	Giovanni Bussi
	<i>What do physics look for in biology? Wandering through cells and chromosome</i>	Ana Maria Florescu

	<i>Among the gears of Artificial Intelligence</i>	Alessandro Laio, Elena Tea Russo e Francesca Rizzato
	<i>Laplace's Demon and atomistic simulations</i>	Alessandro Laio and Elena Tea Russo
	<i>How can a physicist explain biologic systems? Examples of ordinary crazyness.</i>	Mattia Marendà
	<i>Physics and biology: not so far away</i>	Mattia Marendà, Matteo Adorisio e Nina Ilieva
	<i>The physics of viruses and molecules</i>	Giovanni Pinamonti
	<i>When the going gets tough, the toughs get... simulate!</i>	Francesca Rizzato
	<i>Complex is not complicated: similarities between a copying class, a flock and magnets</i>	Francesca Rizzato
	<i>Google ecology: the algorithm that changed our lives can save us from extinction?</i>	Francesca Rizzato
	<i>What language do proteins speak?</i>	Elena Tea Russo
	<i>Life the easiest game: from simple rules to biological complexity.</i>	Edoardo Sarti and Giovanni Pinamonti
	<i>Hey Siri, what is computational linguistics?</i>	Gabriele Sarti
	<i>The life of your data, your life in data.</i>	Roberto Trotta
MATHEMATICS	<i>Lab: Mathematics of shapes. Experiments and ideas from biology</i>	Daniele Agostinelli, Valentina Damioli, Alessandro Lucantonio and Giovanni Noselli
	<i>Computers and their solutions, wrong but useful</i>	Giovanni Alzetta
	<i>The Devil's interval and other mathematical monsters</i>	Stefano Amato
	<i>Matrix is everywhere: graphs and matrices in everyday life</i>	Francesca Arici
	<i>Mathematics of love</i>	Ivan Beschastnyi
	<i>Puzzles and invariants</i>	Ivan Beschastnyi
	<i>The mathematics of the visual system</i>	Ivan Beschastnyi
	<i>What is a flexagon and how to build one</i>	Ivan Beschastnyi

<i>The proof: what you see depends on how you look</i>	Carolina Biolo
<i>Mathematic of space: from football to geographical maps</i>	Gabriele Bogo
<i>That's chaos, not chance</i>	Matteo Casati
<i>Count by ear. From Pythagoras to vocoder</i>	Matteo Casati
<i>Figurae egressum angulorum</i>	Matteo Casati
<i>A sphere against Euclid</i>	Cecilia Collà and Anna Vallortigara
<i>What are supercomputers used for science? And what challenges can they face?</i>	Stefano Cozzini
<i>Chewing numbers in the clouds: how do scientists do arithmetic</i>	Stefano Cozzini
<i>Who cares about mathematics</i>	Riccardo Cristoferi
<i>Tactile mathematics</i>	Giorgia del Bianco and Stefano Piani
<i>Mathematical tricks</i>	Daniele Dimonte
<i>Dobble, how mathematicians play</i>	Daniele Dimonte and Andrea Papale
<i>Beyond Euclid and Descartes: the invisible geometry</i>	Barbara Fantechi
<i>Mathematics. From theory to applications. And back.</i>	Nicola Gigli, Gianluigi Rozza, Maria Strazzullo, Martina Teruzzi, Daniele Gouthier
<i>A non-adjustable world</i>	Michele Graffeo
<i>Behind the scenes of machine learning</i>	Luca Heltai
<i>Profession: coach of micro swimmers</i>	Luca Heltai
<i>Show with the calculator that Zeno was wrong</i>	Roberto Innocente
<i>The lightboard and its physics</i>	Roberto Innocente
<i>... what if Earth would be a donut?</i>	Antonio Lerario
<i>The one who searches, finds ... and the one who REsearches?</i>	Ilaria Lucardesi
<i>Fantastic rabbits and how to count them</i>	Guido Mazzucca

	<i>Mathematics among magic end riddles</i>	Guido Mazzucca
	<i>From albatross' flight to the hull of a ship</i>	Andre Mola
	<i>Waves, hulls e simulations</i>	Andrea Mola
	<i>Not all donuts come out with a single hole</i>	Annamaria Ortu
	<i>Playing with probability theory. How far do we go with common sense?</i>	Gabriele Perfetto
	<i>Navigating towards the future: from supercomputers to tablets with mathematical models and scientific computing</i>	Gianluigi Rozza
	<i>Mathematics for society</i>	Gianluigi Rozza
	<i>Count the uncountable: how big is infinite?</i>	Alessandro Rubin
	<i>Universe counting</i>	Alessandro Rubin
	<i>Epidemics, vaccinations and mathematical models</i>	Alessandro Rubin
	<i>The unknown Rt index</i>	Alessandro Rubin
	<i>A matter of perspective</i>	Carlo Scarpa
	<i>Simply complex</i>	Carlo Scarpa
	<i>Everything under control: equations for the environment</i>	Maria Strazzullo
	<i>If "clouds are not spheres and mountains are not cones"...</i>	Lucia Tealdi
	<i>Give me a pencil and I will measure the world</i>	Lucia Tealdi
NEUROSCIENCE	<i>Neurosciences come for lunch</i>	Marilena Aiello
	<i>Measurements and personal stories: the two neuroscience instruments of studying the brain</i>	Marilena Aiello
	<i>The ways of memory: how we remember poems</i>	Sara Andretta
	<i>Lab: Look into the brain without opening the head</i>	Georgette Argiris and Sebastian Korb
	<i>Lab: How does your brain develop?</i>	Osvaldo Artimagnella, Vittorai Avaro, Simone Chiola, Michele Frisari, Cristina Fimiani, Gabriele Luzzi, Antonello Mallamaci, Viviana Opinato, Larura

		Rigoldi, Manuela Santo, Wendalina Tigani and Jessica Zucco
	<i>Nanomaterials and neurons: from brain machine interfaces to cyborg tissues</i>	Laura Ballerini
	<i>Cognitive Biases - Why should we care more?</i>	Anindita Basu
	<i>The curious brain</i>	Maria Bertuzzi
	<i>Lab: The cutting and sewing together of DNA</i>	Carlotta Bon, Jessica Franzot, Christina Vlachouli, Federica Ferrero and Chiara Santulli
	<i>The brain and the perception of time</i>	Domenica Bueti with Anna Lombardi
	<i>Science on the sofa: What the time is for a neuroscientist?</i>	Domenica Bueti with Ruggero Rollini
	<i>Lab: In search of the meaning of language</i>	John Carr, Mara de Rosa, Jana Hasenäcker and Mari Ktori
	<i>The DNA is mine and I manage it myself. Crack fate</i>	Simone Chiola, isabella Apruzzese and Jessica Racca
	<i>The indecisive stem cells</i>	Simone Chiola and Wendy Tigani
	<i>Humans against monkeys: the language round</i>	Davide Crepaldi
	<i>Nature and culture: why reading is easy and impossible at the same time</i>	Davide Crepaldi
	<i>Mind maps and brain traps</i>	Davide Crepaldi, Gianmarco Ghetti and Giulia Tonel
	<i>Cognitive facts and misdeeds behind our reading skills</i>	Davide Crepaldi, Simone Perfetti and Simone Chiusoli
	<i>Do you really know your brain? From superpowers to super deceptions</i>	Viola Del Pinto
	<i>Behind the doors of the laboratory: The story of an experiment</i>	Adina Drumea
	<i>The reality behind the science manual. What scientists are doing as you prepare for your school test</i>	Adina Drumea

<i>Lab: Exploring language with EEG recordings</i>	Kristina Egumenovska, Zeynep Kaya Gökçen and Katarina Marjanovič
<i>Meta-cognition: How the brain tells you when you're wrong.</i>	Tore Erdmann
<i>The time machine in the brain: how do we perceive time</i>	Anna Fehrenbach and Catia Baldassarri
<i>The mysteries of vision: how do optical illusions work?</i>	Michele Fornaciai
<i>How do we study the human brain?</i>	Michele Fornaciai
<i>Why does our brain fascinate us? More questions than answers</i>	Ana Fiò
<i>The language of the brain</i>	Francesca Franzon and Valentina Pescuma
<i>Cut and sew course with DNA.</i>	Jessica Franzot
<i>Stuck in autopilot: movement, neurons, and neurodegenerative</i>	Vincenzo Giacco with Emma D'Orto and Emanuele Bozzoni
<i>Neuroscience in silico: Mathematics and computers to study the brain</i>	Michele Giugliano and Lorenzo Colombo
<i>"Broadhand" brains</i>	Michele Giugliano
<i>Neurons and electronic chips: how to spy on a neuronal circuit in tissue cultures</i>	Michele Giuliano
<i>Dialogue between silicon neurons and biological neurons</i>	Michele Giugliano, Luca Heltai, Guido Sanguinetti e Davide Zoccolan, with Simona Cerrato, Luca Papapietro e Claudia Sciarma
<i>Neurons and electronic chips: how to spy a neuronal circuit in nerve tissue cultures</i>	Michele Giugliano and Beatrice Pastore
<i>Let's play with the light lightening up and down cells.</i>	Micaela Grandolfo
<i>Brain and sugars: dangerous relationships</i>	Micaela Grandolfo
<i>Lab: Turning on the cells</i>	Micaela Grandolfo and Kevin Yarib Gonzalez Velandia
<i>The hippocampus: A window to brain research</i>	Natalia Grion

	<i>Recording the taste</i>	<i>Domenico Guarascio and Nicole Sarno</i>
	<i>Lab: The reading brain is a hard – working brain</i>	<i>Jana Hasenäcker, Yamil Vidal dos Santos, Viola del Pinto, Olga Solaja</i>
	<i>Lab: Looking into the brain from the outside</i>	<i>Maria Ktori and Yamil dos Santos</i>
	<i>Cognitive mechanism promoting social coordination</i>	<i>Jaroslav Lelonkiewicz</i>
	<i>Alien sequence experiment</i>	<i>Jaroslav Lelonkiewicz</i>
	<i>A brain, many genomes</i>	<i>Gabriele Leoni, Federico Ansaloni, Giovanni Spirito, Nicolò Gualandi, Mauro Esposito and Sara Finaurini</i>
	<i>Embryonic development of the central nervous system</i>	<i>Antonello Mallamaci</i>
	<i>Development of the cerebral cortex</i>	<i>Antonello Mallamaci and his lab group</i>
	<i>From nose to brain: olfaction, between science and literature</i>	<i>Anna Menini and Donato Ramani</i>
	<i>Introduction to neuroscience</i>	<i>Majid Moshtagh</i>
	<i>Lab: Between the forms, sounds, and colors. Towards the discovery of the meaning of words</i>	<i>Andrea Nadalini and Eva Viviani</i>
	<i>Smelling the danger</i>	<i>Valentina Parma</i>
	<i>Lab: Growing... neurons!</i>	<i>Beatrice Pastore and Massimo Righi</i>
	<i>Lab: Cultivating... neurons!</i>	<i>Beatrice Pastore, Francesca Zummo and Federica Ferrero</i>
	<i>Nanomaterials as a basis for growing neurons</i>	<i>Simone Perfetti and Laura Ballarini</i>
	<i>For a handful of neurons. Team quiz on the brain</i>	<i>Gianluca Pietra and Dario Olivieri</i>
	<i>The alphabet of smells</i>	<i>Simone Pifferi</i>
	<i>Sensory extravagances</i>	<i>Simone Pifferi</i>
	<i>Open and close proteins: senses and ion channels</i>	<i>Simone Pifferi</i>
	<i>Pheromones: myth or reality?</i>	<i>Simone Pifferi</i>

	<i>The chemical senses: smell and taste</i>	Simone Pifferi and Gianluca Pietra
	<i>Physiology of olfaction</i>	Simone Pifferi and Gianluca Pietra
	<i>Neuronal circuits and biomaterials</i>	Diletta Pozzi
	<i>Plastic and carbon for growing neurons</i>	Diletta Pozzi, Flavia Fortin and Mariateresa Bradascio
	<i>If seeing is so simple...try to do it!</i>	Olga Puccioni
	<i>Someone reads... and someone understands numbers</i>	Olga Puccioni e Riccardo Cristoferi
	<i>The virus quiz</i>	Massimo Righi
	<i>The first steps on the brain</i>	Manuela Santo
	<i>Science on the sofa: Animal testing. What is really about?</i>	Manuela Santo and Ruggero Rollini
	<i>The strange words experiment</i>	Olga Solaja
	<i>Lab: Non-invasive brain stimulation</i>	Andrea Solmi
	<i>The neural basis of memory how to use it to remember everything</i>	Tiziano Suran and Nicole Beneventi
	<i>The world inside the eyes</i>	Shima Talehy Moineddin
	<i>My brain makes colour</i>	Shima Talehy Moineddin
	<i>Stem cells</i>	Wendy Tignani and Jessica Zucco
	<i>Animal experimentation with science and consciousness</i>	Wendy Tigani, Manuela Santo, Federica Baldassari andh Alessandro Tavecchio
	<i>Electronics and informatics for neurobiology</i>	Andrea Tomicich
	<i>Eugenio: do you remember the face?</i>	Alessandro Treves
	<i>But really it all comes down to who has it bigger?</i>	Alessandro Treves
	<i>The 2014 Nobel Prize for neuroscience: a path from space to memory</i>	Alessandro Treves
	<i>Know and forget: semantic memory and semantic dementia</i>	Miriam Vignando

	<i>The wisdom of the group: live neuroscience experiment</i>	Rosilari Bellacosa and Natalia Grion
SCIENCE AND SOCIETY	<i>The social side of science / Science on social media</i>	Matteo Becchi, Irene Rita Pia Schillaci and Alessandro Tavecchio
	<i>Discussion game: take care of me</i>	Monica Belfiore, Theodora Bogdan, Silvia Girardi, Roman Vuerich e Serena Zacchigna inside the project CURIoSA
	<i>Science: a story full of failures</i>	Andrea Belli
	<i>Beautiful and professional documents with LaTeX</i>	Giorgia del Bianco and Matteo Gamboz
	<i>Send me a selfie</i>	Andrea Delise e Piero Calucci
	<i>Science and stupidity</i>	Tullio Bigiarini and Giorgia del Bianco
	<i>Your future career: many values, many jobs</i>	Laura Busato, Lorenzo Carta, Francesca Rizzato, Paola Rodari
	<i>World Cafè on scientific research and society</i>	Laura Busato, Lorenzo Carta, Francesca Rizzato, Paola Rodari
	<i>Discussion game: I, Robot. Our life with Artificial Intelligence</i>	Simona Cerrato
	<i>Online security, between clouds and underpants</i>	Andrea Delise
	<i>SciENZA Donne: quiz and chat</i>	Elena De Paoli, Camilla Fiz and Domenica Bueti.
	<i>SISSA Virtual Tour</i>	Agnese Glauda, Sophia Grew, Alessandra Ria e Maria Luna Tescari
	<i>The dream team of the Italian physics</i>	Davide Montesarchio
	<i>Is science democratic?</i>	Riccardo Murgia, Costantino Pacilio, Nicola Barsagli e Serena Fabrini
	<i>Maksimović: a half life</i>	Giuseppe Mussardo and oscar Pizzulli

	<i>SISSA Student Day Quiz</i>	Andrea Oddo
	<i>Why does journalism struggle to report science?</i>	Daniela Ovadia and Federica Sgorbissa
	<i>Science at any cost and... revenue. Who finances the research and how it manages it</i>	Gabriele Rizzetto
	<i>Discussion game: Superwomen and supermen? Is it right to use drugs and technology to improve the body and mind?</i>	Paola Rodari
	<i>Tinkering with light and shadows</i>	Elena Tea Russo, Matteo Becchi and Francesca Rizzato
	<i>Ask Me Anything</i>	Maria Strazzullo, Uriel Luviano e Diletta Pozzi
		Alice Ballabio, Alessio Belenchia, Gaia Contu, Maristella Lunardon e Andrea Mola.
	<i>Whose is the sky?</i>	Roberto Trotta, Marina D'Alessandro
	<i>The archipelago of wonders: Paolo Budinich and the birth of the city of science</i>	Erio Tosatti
	<i>We all are Dr. Jekyll and Mr. Hyde: a short journey into behavioral neuroscience</i>	Marcello Turconi
	<i>Between academy and business: research and job opportunities</i>	Simonetta Vetter and Renè Buttò
	<i>Beyond research: effects and benefits for the community</i>	Simonetta Vetter and Renè Buttò