



Swiss Young Naturalists' Tournament 2019

ETH Zurich
2 March 2019



Welcome to the SYNT 2019

Dear participants, teachers, jurors and parents,

We are excited that the venerable ETH Zurich will host the **Swiss Young Naturalists' Tournament** (SYNT) in its third year! An impressive 56 participants will accept the challenge and present and defend their solution to one of the 17 given scientific problems. The SYNT covers the three main natural sciences (biology, chemistry and physics) and introduces young students (i.e. between 12 and 16 years old) to the world of science and research.

Although the SYNT is aimed at participants of all levels, we are proud that the tournament also attracts students with an exceptionally high level. The Swiss team selected from the best participants of the SYNT 2018 managed to win the **International Young Naturalists' Tournament 2019** in Georgia!

The SYNT is only possible thanks to the generous financial contributions of our partners. Furthermore, we are delighted to count on numerous volunteers, teachers and the organizing committee to make the tournament successful.

It is our pleasure to welcome you to the third SYNT!

Pro IYPT-CH and Organizing Committee

Visit www.synt.ch for the latest information on the SYNT 2019.



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Swiss Young Naturalists' Tournament

Where tomorrow's scientists meet.

IYNT

The **International Young Naturalists' Tournament** (IYNT, also see www.iynt.org), bridges gaps between natural sciences and inspires young students. The IYNT aims at promoting creative potential of teenagers aged 12 through 16 who are eager to explore the world, experiment, work in teams, and gain new skills in an international setting.

A so-called **Science Fight** resembles a scientific seminar and lines up three teams of six students each. The teams in turn present and discuss their solutions to one of the problems and review the performances of the other teams. They are then graded by a professional jury of research scientists and educators.

The **problems** of the IYNT are published one year prior to the tournament and come from various areas of natural sciences. They are chosen such that no single correct solution exists and thus each presentation will show different aspects of the problem. Careful preparation and creativity in solutions are as important for creating a good impression, as is a good understanding of natural sciences.

In **preparing** for the IYNT students do not just learn how to tackle challenging science problems, but also how to work in a **team**, use computers to **collect and analyse data, present scientific results and debate**. The Science Fights are in **English**, helping the students prepare for their future at university where an increasing number of lectures and seminars are held in English.

Pro IYPT-CH

The SYNT is organized by the organization Pro IYPT-CH. The aim of Pro IYPT-CH is to make the idea behind the International Young Physicists' Tournament (IYPT) better known in Switzerland and to promote and support the commitment of institutions, teachers and students. Since 2017 our organization has also focused on younger students interested in science and offer a new tournament: the **Swiss Young Naturalists' Tournament** (SYNT).

Beside organizing the Swiss tournaments SYNT/ SYPT and the preparation events SYNT Workshop/ Physics Week, the tasks of Pro IYPT-CH include publicity, the selection and preparation of the Swiss teams for the IYNT and IYPT as well as the coaching during these tournaments. If you would like to support Pro IYPT-CH and the SYNT/SYPT and would like to be informed about our activities, you are very welcome to **become a member**. Please contact Lioba Heimbach (see below) to get more information about membership or register online (www.synt.ch).

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Member Support: Lioba Heimbach, ETH Zürich (members@synt.ch)

Website: www.synt.ch

Agenda of the SYNT 2019

Date: Saturday, 2 March 2019

Venue: ETH Zurich Zentrum, Main Building (Rämistrasse 101)

Fees: Participation at the SYNT is **completely free**. Lunch and dinner are offered by the organiser. Train tickets will be refunded after the tournament. To have your train ticket (return ticket, 2. class, half-fare) reimbursed, please fill in the form on our website (synt.ch/index.php/contact/contact-reimbursement).

Schedule:

from 8:15	Arrival, coffee & orange juice (HG E Süd)
9:00	Address of welcome (HG E 5)
9:30	Team photos (HG E 5) /Jury Meeting (HG F 33.1)
10:30	Science Fights round 1
12:30	Lunch (HG E Süd)
13:10	Jury Meeting (HG F 33.1, for jurors arriving for the afternoon round only)
13:30	Science Fights round 2
15:30	Coffee (HG E Süd)
16:00	Final Fight (HG E 5)
17:45	Award Ceremony
18:15	Apéro (HG E Süd)



Problems for the SYNT 2019

- 1) **2D Foam:** Soap foam enclosed between two glass sheets appears as a network of polygons. Such foams evolve with time, as individual bubbles move and coalesce, and the liquid drains out. Investigate the structure and evolution of 2D foams.
- 2) **Mountains:** What are the tallest mountains in the Solar System? Propose and analyze the theoretical models that can allow predicting the maximum altitudes of mountains on various celestial bodies.
- 3) **Salty Soils:** Saline soils may affect plant growth. How do salts affect the growth and development of plants?
- 4) **Sunflower Spirals:** Patterns of seeds in the head of a sunflower have a very specific geometric structure. How can one describe and explain such a structure? What other plants demonstrate similar geometric patterns in their leaves or seeds?
- 5) **After the Tempest:** Take two beakers of water and use a spoon to stir water clockwise in one beaker and counterclockwise in the other beaker. Observe the beakers after a sufficiently long time when the water flow has slowed down. Is it possible to determine the original direction of water flow after 1 hour? 1 day? 1 week?
- 6) **Soundproofing:** It is sometimes necessary to reduce unwanted noise in a closed space. Test various methods to soundproof your room.
- 7) **Burning Glass:** Propose and test various methods to start a fire with a magnifying glass.
- 8) **Smells:** Smells spread through the air, however it would take some time before a human nose is able to detect the smell. Study different aspects of odor diffusion and sensation of odor by humans.
- 9) **Fading in Sunlight:** Printed pages fade in direct sunlight, especially if certain types of ink and paper are used. Propose quantitative parameters to study the prolonged exposure of ink and paper to sunlight.
- 10) **Elastic Bones:** Chicken bones kept in acidic conditions for a few days become elastic. Perform such an experiment in controlled conditions and investigate what components of bones are responsible for their mechanical properties.
- 11) **Yeast:** Investigate the rate of the multiplication of yeast at different temperatures.
- 12) **Moon:** The apparent size of the Moon perceived by an observer depends on multiple factors. Investigate these factors and their role.
- 13) **Invent Yourself – Baking Bread:** Distinctly different types of bread are produced by varying methods of baking, proportions of ingredients, and types of flour. Suggest an experimental and theoretical study of how one or several bread varieties are baked.
- 14) **Invent Yourself – Eye Movements:** Human eyes are in constant involuntary and voluntary motion when exposed to visual stimuli, such as scene viewing, reading or tracking a moving object. Use eye movement data to select and study an interesting psychological effect concerning perception of images and motion, in humans or in animals.
- 15) **Invent Yourself – Fractals:** Propose an interesting experimental and theoretical investigation involving fractal geometry.
- 16) **Invent Yourself – Short-Term Memory:** What is the capacity and duration of human short-term memory? Suggest an experimental study to evaluate short-term memory and factors that may have important influence.
- 17) **Invent Yourself – Atmospheric Electricity:** Electric field is present in the atmosphere even in good weather. Suggest an interesting problem concerning atmospheric electricity.

(The problems are taken from the official set of problems for the IYNT 2019. The authors are Dźmityr Karpiećanka, Alena Kas-tenka, Tatyana Korneeva, Ilya Martchenko, and Evgeny Yunosov. Selected, prepared, and edited by Ilya Martchenko and Evgeny Yunosov. The official problem set can be found on: iynt.org/IYNT_Problems_2019.pdf.)

Fight Plan SYNT 2019						
Round 1 (Saturday, 2 March, 10:30 - 12:30)						
Fight 1.1	Reporter			Opponent		Observer
Room	The Lab Rats			The time tickers		earth bread
HG F 26.3	Jade	Klee	3 Salty Soil	Felix	Borggräfe	
	The time tickers			earth bread		The Lab Rats
	Ben	McKinlay	10 Elastic bones	Ean	Cole	
	earth bread			The Lab Rats		The time tickers
	Samrudh	Soogareddy	6 Soundproofing	Henry	Ledan	
Fight 1.2	Reporter			Opponent		Observer
Room	Mountainproof			Carnot's engine		Wavy Bones
HG F 26.5	Adam	Benslama	6 Soundproofing	Christopher	Coddington	
	Carnot's engine			Wavy Bones		Mountainproof
	Eliana	Holerca	10 Elastic bones	Giacomo	Nunziata	
	Wavy Bones			Mountainproof		Carnot's engine
	Filippo	Marotta	3 Salty Soil	Cajetan	Tulej	
Fight 1.3	Reporter			Opponent		Observer
Room	Salty Bulb			The Bernoulli Effects		Gibbs-Energy
HG G 26.3	Amir	Jakupi	3 Salty Soil	Henri	Staehelin	
	The Bernoulli Effects			Gibbs-Energy		Salty Bulb
	LohithSai	Yadala Chanchu	7 Burning glass	Yvan	Plaum	
	Gibbs-Energy			Salty Bulb		The Bernoulli Effects
	Leo	Stribbos	10 Elastic bones	Dunja	Gruber	
Fight 1.4	Reporter			Opponent		Observer
Room	The Lone Rangers			Dragons		SoLu
HG G 26.5	Jeremy	Kalmin	10 Elastic bones	Margarita	Prenio	
	Dragons			SoLu		The Lone Rangers
	Pola	Jankowska	11 Yeast	Sophia	Zanghellini	
	SoLu			The Lone Rangers		Dragons
	Luca	Bresch	3 Salty Soil	Ilia	Miloglyadov	
Fight 1.5	Reporter			Opponent		Observer
Room	The Perfect Cell			RonJon		Natural Naturalists
HG E 23	Charles	Ouendag	11 Yeast	Jonathan	Jelenik	
	RonJon			Natural Naturalists		The Perfect Cell
	Ramon	Büchner	3 Salty Soil	Max	Huber	
	Natural Naturalists			The Perfect Cell		RonJon
	Lorenzo	Aragon	10 Elastic bones	Sean	Fairbairn	
Fight 1.6	Reporter			Opponent		Observer
Room	No bones about it!			Icon		Leonardo
HG D 3.1	Veronika	Semenova	10 Elastic bones	Aayush	Gogate	
	Icon			Leonardo		No bones about it!
	Connor	Claeys	17 Invent Yourself: Atmospheric electricity	Daniel	Schoenmakers	
	Leonardo			No bones about it!		Icon
	Leon	Köhler	3 Salty Soil	Julia	Wydrych	
Fight 1.7	Reporter			Opponent		Observer
Room	ISZL's AI			c-quarks		The Naturally Selected
HG D 3.3	Isaiah	Sweeney	3 Salty Soil	Alexis	Jaskzowski	
	c-quarks			The Naturally Selected		ISZL's AI
	Lilli	Klein	10 Elastic bones	Katherine	Shelton	
	The Naturally Selected			ISZL's AI		c-quarks
	Becky	Schumer	9 Fading in sunlight	Aleksandra	Kleszczewska	
Fight 1.8	Reporter			Opponent		Observer
Room	JuLari			bottom-up		Endeavor
HG F 33.1	Julia	Risch	7 Burning glass	Esha	Tata	
	bottom-up			Endeavor		JuLari
	Rohini	Pillay	3 Salty Soil	Nathan	Nicholas	
	Endeavor			JuLari		bottom-up
	Colin	Daines	10 Elastic bones	Larissa	Häfeli	
Fight 1.9	Reporter			Opponent		Observer
Room	the short-term memory of a chicken bone			Space Bread		
HG D 5.1	Ciel	Bernoulli	10 Elastic bones	David	Frankhauser	
	Space Bread			the short-term memory of a chicken bone		
	Margot	Lurie	13 Invent Yourself: Baking bread	Paula	Krneta	
Fight 1.10	Reporter			Opponent		Observer
Room	Cobras			Reye bread		
HG D 5.3	Kieran	Bakken	11 Yeast	Koen	Oder	
	Reye bread			Cobras		
	Dana	Villamin	13 Invent Yourself: Baking bread	Brayden	Kim	

Fight Plan SYNT 2019						
Round 2 (Saturday, 2 March, 13:30 - 15:30)						
Fight 2.1	Reporter			Opponent		Observer
Room	Wavy Bones			RonJon		Gibbs-Energy
HG F 26.3	Giacomo	Nunziata	6 Soundproofing	Ramon	Büchner	
	RonJon			Gibbs-Energy		Wavy Bones
	Jonathan	Jelenik	16 Invent Yourself: Short-term memory	Leo	Strijbos	
	Gibbs-Energy			Wavy Bones		RonJon
Fight 2.2	Reporter			Opponent		Observer
	ISZL's AI			Mountainproof		JuLari
	Aleksandra	Kleszczewska	13 Invent Yourself: Baking bread	Adam	Benslama	
	Mountainproof			JuLari		ISZL's AI
HG F 26.5	Cajetan	Tulej	2 Mountains	Julia	Risch	
	JuLari			ISZL's AI		Mountainproof
	Larissa	Häfeli	6 Soundproofing	Isaiah	Sweeney	
	Natural Naturalists			Leonardo		c-quarks
Fight 2.3	Reporter			Opponent		Observer
	Leonardo			c-quarks		Natural Naturalists
	Daniel	Schoenmakers	1 2D foam	Lilli	Klein	
	c-quarks			Natural Naturalists		Leonardo
HG G 26.3	Alexis	Jaszkowski	7 Burning glass	Lorenzo	Aragon	
	Natural Naturalists			Leonardo		c-quarks
	Max	Huber	11 Yeast	Leon	Köhler	
	Natural Naturalists			Leonardo		c-quarks
Fight 2.4	Reporter			Opponent		Observer
	the short-term memory of a chicken bone			The Perfect Cell		No bones about it!
	Paula	Krneta	16 Invent Yourself: Short-term memory	Charles	Ouendag	
	The Perfect Cell			No bones about it!		the short-term memory of a chicken bone
HG G 26.5	Sean	Fairbairn	6 Soundproofing	Veronika	Semenova	
	No bones about it!			the short-term memory of a chicken bone		The Perfect Cell
	Julia	Wydrych	11 Yeast	Ciel	Bernoulli	
	Natural Naturalists			Leonardo		c-quarks
Fight 2.5	Reporter			Opponent		Observer
	bottom-up			Salty Bulb		The Naturally Selected
	Esha	Tata	6 Soundproofing	Amir	Jakupi	
	Salty Bulb			The Naturally Selected		bottom-up
HG E 23	Dunja	Gruber	7 Burning glass	Becky	Schumer	
	The Naturally Selected			bottom-up		Salty Bulb
	Katherine	Shelton	16 Invent Yourself: Short-term memory	Rohini	Pillay	
	Natural Naturalists			Leonardo		c-quarks
Fight 2.6	Reporter			Opponent		Observer
	Cobras			SoLu		Space Bread
	Brayden	Kim	6 Soundproofing	Luca	Bresch	
	SoLu			Space Bread		Cobras
HG D 3.1	Sophia	Zanghellini	16 Invent Yourself: Short-term memory	Margot	Lurie	
	Space Bread			Cobras		SoLu
	David	Frankhauser	17 Invent Yourself: Atmospheric electricity	Kieran	Bakken	
	Natural Naturalists			Leonardo		c-quarks
Fight 2.7	Reporter			Opponent		Observer
	The Lab Rats			Icon		Dragons
	Henry	Ledan	7 Burning glass	Connor	Claeys	
	Icon			Dragons		The Lab Rats
HG D 3.3	Aayush	Gogate	14 Invent Yourself: Eye movements	Pola	Jankowska	
	Dragons			The Lab Rats		Icon
	Margarita	Prenio	5 After the tempest	Jade	Klee	
	Natural Naturalists			Leonardo		c-quarks
Fight 2.8	Reporter			Opponent		Observer
	Endeavor			Reye bread		earth bread
	Nathan	Nicholas	11 Yeast	Dana	Villamin	
	Reye bread			earth bread		Endeavor
HG F 33.1	Koen	Oder	14 Invent Yourself: Eye movements	Samrudh	Soogareddy	
	earth bread			Endeavor		Reye bread
	Ean	Cole	7 Burning glass	Colin	Daines	
	Natural Naturalists			Leonardo		c-quarks
Fight 2.9	Reporter			Opponent		Observer
	The Lone Rangers			The time tickers		
	Ilia	Miloglyadov	7 Burning glass	Ben	McKinlay	
	The time tickers			The Lone Rangers		
HG D 5.1	Felix	Borggräfe	11 Yeast	Jeremy	Kalmin	
	Natural Naturalists			Leonardo		c-quarks
	Reporter			Opponent		Observer
	Carnot's engine			The Bernoulli Effects		
HG D 5.3	Henri	Staehein	16 Invent Yourself: Short-term memory	Eliana	Holerca	
	Carnot's engine			The Bernoulli Effects		
	Christopher	Coddington	17 Invent Yourself: Atmospheric electricity	LohithSai	Yadala Chanchu	
	Natural Naturalists			Leonardo		c-quarks

Regulations for the SYNT 2019

1. Swiss Young Naturalists' Tournament

The [Swiss Young Naturalists' Tournament \(SYNT\)](#) is a science competition for students up to 16 years old (students must not turn 17 years during the calendar year of the respective tournament). Participants are challenged to prepare a theoretical and experimental solution to a complex problem and to present and defend their solution in a debate (Science Fight) against the opposing team's scrutiny.

The SYNT takes place on one day (e.g. Saturday) before the International Young Naturalists' Tournament (IYNT) of the same year (i.e. usually between March and May). The tournament is organised by the association Pro IYPT-CH.

In order to facilitate preparation for students wishing to participate at the SYNT, Pro IYPT-CH organizes the SYNT Science Workshop. The [SYNT Science Workshop](#) is a three-day long preparation course during which participants can conduct measurements and learn the basic skills required at the SYNT. The SYNT Science Workshop takes place a few weeks prior to the SYNT.

The [problems](#) for the SYNT are selected from the IYNT problems. They are published on the SYNT website (www.synt.ch) at least six months before the SYNT.

2. Website

Important information (deadlines, problems, results, etc.) about the SYNT and the Swiss team at the IYNT are published on the SYNT website (www.synt.ch).

3. Registration

The deadline for registration is published on the website at least two months in advance. This date applies both for students wishing to participate at the SYNT and the SYNT Workshop as well as for students who only wish to participate at the SYNT.

Students can register online on the SYNT website. Only complete applications will be considered. An application is only valid once the student has received a confirmation email from Pro IYPT-CH.

There are two possible ways to apply:

- **Team:** Any two participants from any school in Switzerland (including international Schools) can register as a team of two students. There can be several teams from the same school.
- **Individual participants:** The organizer will try to match students applying as individuals with other students to form teams.

The students in a team must not present the solution to the same problem.

4. Fees

The participation at the SYNT and SYNT Science Workshop is [free](#).

5. Preparation

Pro IYPT-CH organizes the [SYNT Science Workshop](#) during which the students receive coaching and can prepare for the tournament.

In addition, Pro IYPT-CH seeks the support of [universities and research institutes](#) (e.g. ETH, Empa, Science Lab, etc.) in order to allow the students to use adequate experimental equipment where the schools cannot provide this or to get in contact with experts in the respective field.

6. Science Fights

All teams participate in two rounds of [preliminary Science Fights](#). The fight plan is published before the start of the SYNT. Every student in a team takes the role of Reporter and Opponent exactly once. The Science Fights are [in English](#).

7. Science Fight Regulations

7.1. Stages and Time Schedule

At the start of a round the jury members and the teams briefly introduce themselves.

A Science Fight with two teams is divided into two stages. In each stage the roles of the [Reporter](#) and [Opponent](#) are assigned according to the table below. If there are teams with more or less than two students or Science Fights with more or less than two teams, similar schemes apply.

Science Fight with two teams		
Stage	1	2
Team 1	Rep	Opp
Team 2	Opp	Rep

The tasks for the two students actively involved in a fight are as follows:

- The [Reporter](#) presents his/her solution for the selected problem. The solution is expected to cover at least an important aspect of the problem with a theoretical model and experimental results verifying this model. The solution should be understandable for a secondary school student.
- The [Opponent](#) asks clarifying and critical questions and points out possible shortcomings and mistakes in the solution presented by the Reporter. He/She shows the presentation's strengths and weaknesses. The discussion has to be based on the solution presented by the Reporter (not on the Opponent's). A good Opponent should lead the discussion in a way that both participants can learn something new.

The Science Fight follows a strict timetable (see table below). After the time reserved for a phase has been used up no new thought may be added. If the preparation time is exceeded, the time for the next phase is shortened accordingly.

Phase	Time (total 30')
Presentation of the Reporter	8'
Clarifying questions of the Opponent to the Reporter	3'
Preparation of the Opponent	3'
Statement by the Opponent	4'
Discussion between Opponent and Reporter	5'
Concluding Remarks of the Opponent	1'
Concluding Remarks of the Reporter	1'
Clarifying questions of the jury to all speakers	5'

7.2. Team Work and Aids

During a Science Fight the team members are allowed to communicate with each other. Support from outside the team (e.g. from their science teacher) is strictly forbidden.

The internet may be used to access a dictionary, encyclopaedia or similar, but not for communication.

Swiss Young Naturalists' Tournament

Where tomorrow's scientists meet.

During each stage of a Science Fight there is only one active participant per team. The other team members can help with technical support or written notes. In exceptional circumstances the chairperson can allow short comments from the other team members.

8. Jury

The Jury is organised by Pro IYPT-CH. Each jury consists of a chair person who ensures that the SYNT-regulations are obeyed and other jurors.

At the end of each stage the jury assesses the performances and each juror shows marks from **1 to 30 for the Reporter** and from **1 to 20 for the Opponent**. The score for a team corresponds to the weighted average (highest and lowest mark with 50 %, all others with 100 %).

9. Ranking

The grades of each fight are used to make a team ranking. The ranking will be published.

10. Final Fight

The two teams with the **highest total score** (team ranking) after two rounds qualify for the **Final Fight**. In case of two teams in second place with the same total score the more balanced individual scores are preferred. In the Final Fight the second team after second rounds presents first, the first team last.

Within thirty minutes after announcing the participants of the Final Fight, the teams notify the organiser of their favourite problem. If both teams intend to present the same problem, the better-placed team has higher priority. The accepted problems are announced immediately.

The Final Fight follows the same regulations as the normal Science Fights. In a team of two every team member has to be on stage in at least one role.

11. Absence of a Team Member

In case a team member is unexpectedly unable to attend the SYNT the team must report this to the organisers immediately.

In case a team is reduced to only one team member, the remaining team member may find one additional helper who is eligible to participate at the SYNT and is not active in another fight. The helper is not allowed to take a role on stage. The organisers must be informed immediately. The team is then expected to perform the roles of the missing team members.

12. Team Selection

If Pro IYPT-CH sends a team to the International Young Naturalists' Tournament (IYNT), the following holds.

Six students can qualify to represent Switzerland at the IYNT. The members of the winning team are directly qualified, unless a team member missed one of his/her stages in the preliminary rounds. Other team members are selected by Pro IYPT-CH. For this Pro IYPT-CH considers the individual performance as well as further criteria.

In case a member is unable to be part of the IYNT team, Pro IYPT-CH will approach further candidates.

13. Disciplinary action and Violations of Regulations

Participants or teams that violate the SYNT regulations can be sanctioned by a point deduction of up to 30 points per participant or disqualification.

All participants must behave in an appropriate manner. Unfair behaviour can lead to point deduction of up to 30 points per participant or disqualification.

The final decision on any possible sanctions is taken by Pro IYPT-CH.

14. Appeal

In case one or several participant(s) or juror(s) feel(s) an action or behavior of an individual or group does not comply with the SYNT regulations, he or she may choose to report this. The procedure is as follows:

For incidents not concerning grading:

- For incidents that occurred during a fight round: The incident must first be reported to the chair of the jury. In case the matter cannot be resolved the incident may be reported to the organizers. Pro IYPT-CH will decide on further actions or consequences.
- For incidents that occurred outside a fight room: The incident must be reported to the organizers. Pro IYPT-CH will decide on further actions or consequences.

For incidents concerning grading:

- The incident must be reported to the organizers no later than one hour after the respective fight round finished. The report must include a justification why the grading should be reconsidered. Pro IYPT-CH will then make a final decision. Pro IYPT-CH will in any case justify its decision towards the involved parties.

Note: A retrospective change of a grade or its weighting will only be considered in extreme cases. Due to organizational reasons any change of grades will only influence the team selection.

15. Responsibilities

The regulations have been approved by the association Pro IYPT-CH.

Zurich, 19 February 2019



Marking Guidelines

Presentation:

- Structure (balanced theoretical and experimental parts, focus on relevant results)
- Comprehensibility (adequate level, good visuals, clear statements)
- Completeness (greater context of problem, relevant parameters introduced, theoretical prediction for relevant aspects, comparison with own measurements, questions in task answered, bibliography)
- Scientifically correct (experiments well documented, valid approach and conclusions, consistent notation, units)
- Diagrams (correct axis labels, error bars, justified fit functions, fit parameters with correct units, conclusions drawn from results, deviations from fit function or theory discussed)
- Errors (reasonable error estimates, properly rounded results, comparison with theoretical predictions and/or literature)
- Layout (appealing and consistent design, titles, slide numbers, captions for figures and table, formulae set with formula editor)

Discussion :

- Analytical skills (grasp strengths and weaknesses, reaction to new ideas)
- Understanding of natural sciences (broad and deep knowledge base, quickly grasps new concepts)
- Politeness (objective and constructive feedback, polite and calm discussion, persistent but fair)
- Course of discussion (Opponent leads the discussion without dominating, active and equal participation in discussion of Reporter/Opponent, discussion of relevant aspects whilst sticking to solution of the Reporter, clearly stating own opinion)

Personal Skills:

- Language (understandable English, clear pronunciation, vivid speech, convincing body language)
- Teamwork (shares and explains own results, helps team with own skills, persuasive and motivating personality)
- Reaction to critique (can accept critique and reacts in a positive way)

Pro IYPT-CH and the SYNT are greatly supported by:

ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich



sc | nat 

Swiss Academy of Sciences
Akademie der Naturwissenschaften
Accademia di scienze naturali
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