



INVITED ARTICLES

Articles comprising the history, impact and report of IYPT activities are invited from worldwide IYPT members.





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A Vision of the Future of IYPT

International Young Physicist's Tournament is close to conclude the third decade of its existence. If it would be a human being, one could say it is in its best years – the right mix of experience and discretion on one side, but still a lot of energy and enthusiasm on the other. I will try to do my best to help the IYPT to further develop to a mature, well respected, broad, but still high quality competition.

The history of IYPT is really rich and successful. All former organizers showed a great competence in using opportunities and handling crises. Our tournament managed to float through very turbulent times of changes in early nineties in the European east bloc, which formed, at that times, the core of participating countries. Each single year, the annual IYPT competition was organized on a highly professional level. We kept the general idea of the tournament and most of its rules – we have seventeen new and open ended problems every year, teams of five high school students challenging each other and discussing their solutions and last, but not least, an international jury.

New teams and the competition system

The current competition system with five selective rounds and the final was designed on the beginning of this millennium. The system guarantees that each team meets during the tournament about 10 other teams, what is perfectly fine with up to 20 teams in the competition, what was the usual number at that times. Recently, the number of participating teams was attacking the number 30 and we have all hopes to beat this figure at IYPT 2016 in Russia, with 33 preregistrations. Here the system starts being unstable – each competing team only meets a small fraction of other teams and its final result relies on the initial draw.

It is great to see IYPT growing and I hope for a further, sustainable growth. To support this idea, I believe there are two basic tasks we face. One is to design a competition system which is flexible enough to accommodate much more than thirty teams. The other one is to prepare an arrangement that helps new countries to enter the tournament.

Countries with long IYPT tradition usually select team members via a national and sometimes also regional competition(s). Students devote to IYPT preparation months of work and the level of their presentations is very high. This forms a non-trivial entrance barrier for new teams that are expected, out of the scratch, to be a partner in discussion for the most experienced teams. We shall think about a system that would allow new countries to adapt to the competition rules and level. This might be possibly done by allowing them to observe some physics fights and perhaps take part on some of them, together with other new teams.

Problems

High quality, accessibility as well as safety of all IYPT problems is guaranteed by the Problem committee. It invites everyone, inside and outside the IYPT community, to submit problem proposals via our webpage www.iypt.org at any time during the year. Annually, all proposals are summarized, voted on by delegates from participating countries and finally approved. Now we can be sure that each single problem is well tested and allows for both theoretical and experimental solution on the IYPT level. For the future we aim to further develop this system, perhaps by asking a formal written review for all problems that advance to serious candidates for selection. Such an independent review would bring us a second opinion on the problem and take off some of the load and responsibility, which now mostly lies on the members of the problem committee.

Juries

For a long time, jury was considered as the Achilles' heel of IYPT. Indeed, the work of jurors is extremely hard and challenging. Within a few minutes, we have to judge results of a work that has been performed for months, consulted with the best experts in the field and supported by loads of experimental data. Some of our jurors have seen other solutions of the same problem before, some are experts in that particular field, others have coached their own team for the respective problem. This often led to big discrepancies in grading, followed by disappointment of teams.

In recent years, we carried out several activities to increase the quality of juries and grading. First of all, we introduced qualification criteria, clearly stating the minimal standard for a juror – a degree in physics or in education of physics, the later connected with experience. We also introduced scoring guidelines that shall help jurors to give grades based on a common set of criteria. To increase the transparency of grading, all extremal grades have to be justified by jurors immediately and all the guidelines filled by jurors are scanned and available online. We also ask all jurors to take part on a short jury briefing before the tournament and recently require new jurors, without an experience in judging the IYPT competition, to take a “calibration round” of grading before their grades are taken into account. And most recently, we allow all teams to give us a written feedback on the work of jurors. That all these measures have an effect is underlined by the fact that in last two years the perception of the jury work was significantly improved.

But still, we have plans to continue with the jury development. This year, new scoring guidelines shall

be tested and if successful, we shall use them from IYPT 2017. Better accessibility of IT infrastructure comparing to the situation decades ago opens new possibilities for designing more complicated schemes of processing partial grades for different aspects of team's performance. We want also gather more data from jury feedbacks from teams and adjust the preparation of jurors to address possible issues mentioned there. We consider the possibility of allowing more time for jury preparation before the tournament, especially for new jurors, by adjusting the standard time schedule of the tournament.

Conclusion

Since 1988, when first teams gathered in Moscow to compete in presenting solutions of physics problems, many things have changed. From a group of friends and colleagues we advanced to a registered organization with formal members, statutes, contracts and committees. My vision is to keep both these aspects in a productive symbiosis. To have a large, honored, well-managed and transparent competition, with clear and respected rules and procedures, so that the name IYPT is known and accepted by every person involved with physics education. At the same time, I hope that IYPT community will stay as it is now – friendly, informal, helpful, sharing the same ideas and targets.

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He started to interact with IYPT in 1993 as a team captain on the national level. He observed IYPT 1997 in Cheb and was a team leader of Slovak team in 1998 in Donaueschingen. Since then he attended every IYPT in the position of a team leader, he was elected to Secretary General in 2006 (and reelected in 2010 and 2014) and finally elected to President in 2015.