

Astronomy Olympiad Archive

This archive includes all major Olympiads, as well as some more obscure ones. I try to update it at least once every few months. Because it's my personal archive, it contains items which are not exam papers, such as problem sets, statistics, and Olympiad results. I've left the results files in for the benefit of students, as they indicate the difficulty of the problems and allow for meaningful self-assessment.

The archive is somewhat skewed towards Eastern European competitions, but translation software goes a long way. Notably, the archive includes a decent attempt to collect all Bulgarian Olympiad papers in one place. Since people seem unwilling to make the IAO selection round papers public, some gaps remain.

Indeed, for any Olympiad, if you spot any gaps more than a year old and you can fill them in, please [email me](#)!

Opinionated descriptions for some of the competitions in the archive:

- IOAA – International Olympiad on Astronomy and Astrophysics. The more popular International Olympiad. Large syllabus with lots of formulae to learn, but the majority of the problems are plug and chug. However, one faces serious time pressure – a theory exam of ~15 lengthy problems in 5 hours, and the data analysis exam might be even worse. For the observational round you'll need to memorise a lot of objects and coordinates. Often this round has multiple components – naked eye, star charts, planetarium, and whatever else people can think of. There's also a fun low-stakes team competition.
- IAO – International Astronomy Olympiad. The less popular (albeit older) International Olympiad. There are limits on age and number of appearances, and the syllabus is respectively shorter. Within that syllabus, however, one may get trickier problems than in IOAA! Russian-style theoretical round (5 hours for ~5 problems), and you'd do well to go through the previous exams, as problems are sometimes repeated word-for-word. Marks are sometimes given out for drawing penguins and polar bears. Practical rounds mostly involve measurements and graphing, with less number crunching than in IOAA. For the observational round, memorisation doesn't matter as much as skills with a telescope and basic orientation.
- ru – Russian National Olympiad. Personal favourite. Not that many problem topics, but treated very creatively, and it's mostly the work of one man. Short problem statements, but the amount of thinking you need to do means you're under some time pressure here as well. Having gone through these problems will give you feelings of power (when it comes to geometry/visualisation). The Olympiad used to feature a theoretical round and a practical round; these were recently merged (the practical problems were essentially theory problems plus one measurement on a picture, anyway). Apart from that, a "Blitz Test" was introduced. The IOAA team selection tests are managed by a separate(-ish) group of people, and the style differs significantly. Still very difficult problems, but less geometry, and they span all the IOAA syllabus and beyond.
- mos – Moscow Olympiad. I think of it as a toned-down version of the Russian Olympiad, i.e. similar problem style, but not as hard. Features some interesting qualitative questions. There is also an observational round in a planetarium.
- spb – Saint Petersburg Olympiad. Infamous for its ban on calculators. The idea behind

this isn't to teach arithmetic, but rather to teach students how to approximate well. It's possible for students outside Russia to take part! Very short problem statements, but it's not easy. Quite astrophysical compared to the other Olympiads in Russia – I've seen gravitational redshift, accretion disks, Eddington limit, and the like come up.

- bg – Bulgarian National Olympiad. There are similarities to Russian-style and Western-style Olympiads. This makes the problems here a good entry point to both. The problems are mostly standard, though something inspired comes up once in a while. Occasional open-ended questions where your answer can either be a single word or a whole litany, which doesn't appeal to me much. I've contributed to the IAO team selection tests since 2018.

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