Contribution ID: **363** Type: **Parallel**

From Real-Life Astrophysics Research Questions to Olympiad Problems

Monday 7 July 2025 09:05 (20 minutes)

Data analysis tasks are a key component of the International Olympiad on Astronomy and Astrophysics, a prestigious competition for high school students. Each participating country has its own selection process, open to students with an interest in Astronomy. Exam questions are an excellent way to introduce students to novel topics, provided the required knowledge to solve them is within the high school level. As a former competitor in Romania and one of the current organizers of the national selection, I created three problems based on real-life research projects. One problem presents noise sources characterization in gravitational wave detectors while it also assesses students'understanding of logarithmic scales and their ability to fit data using the least squares method. One exercise uses real spectra of galaxies in the COSMOS field for Doppler shift and spectral line strength calculations. Data from the citizen science website Zooniverse.org is used in the third problem, presenting this novel way of research while testing pupils'knowledge about error propagation and transiting exoplanets. Although the short-term goal is to select the best competitors to represent Romania at the International Olympiad, the long-term aim is to teach all participants about current topics and methodologies in Astrophysics research.

Secondary track

Author: MIRITESCU, Catalina-Ana (IFAE)

Presenter: MIRITESCU, Catalina-Ana (IFAE)

Session Classification: T14 (Outreach, Education and EDI)

Track Classification: T14 - Outreach, Education and EDI