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Transforming physics learning via Research & Practice
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Exploring Student Estimates of Astronomical Scales: Impact of Question Formulation and Visualisation

Tuesday 1 July 2025 09:20 (20 minutes)

This work reports on the administration of an online, interactive survey, assessing the estimates of N=201 high school students on astronomical scales. Five questions were asked, two of which probing estimates on the relative sizes of astronomical bodies, and three on the relative distances between them. We investigated the effects of different question formulations and customised visualisations on these estimates. Results show that students generally underestimated all relative distances. There was a significant difference in the magnitude of the estimates between the two question formulations. The effect of the visualisations was clearly larger for size-related questions than for distances.

Education level

Age 15-18 (Secondary education)

Physics topic

Astronomy and Astrophysics

Research focus

Student conceptions / Preconceptions / Misconceptions

Research method

Analytic Physics Education Research (Quantitative research)

Organizing preference criteria

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Session Classification: Parallel oral presentations

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