Contribution ID: **45** Type: **Oral Presentation**

Students' Knowledge and Understanding of Basic Astronomy: A Comparative Study

Tuesday, 2 September 2025 16:00 (15 minutes)

This study explores students' understanding of fundamental astronomy concepts using the Basic Astronomy Questionnaire (BAQ), a concise instrument designed to probe critical concepts for building a solid foundation in astronomy education, such as astronomical scales and sizes, the seasons, and gravity. Research indicates that students frequently hold alternative views about these topics (Rajpaul et al., 2014, 2018; Makwela et al., 2022), emphasising the need for systematic assessment.

The BAQ project is envisioned as a large-scale international comparative study, beginning with implementations in South Africa and Germany. By examining responses across different countries, the study aims to identify both differences and commonalities in students' comprehension of astronomy concepts shaped by language, curriculum design, educational approaches, and cultural factors. These insights will inform the development of more effective and context-sensitive strategies for astronomy education.

The research is conducted in collaboration with the International Astronomical Union's Office of Astronomy for Education (OAE) and its global network of National Astronomy Education Coordinators (NAECs), who are instrumental in reaching diverse student populations. While the primary focus is on secondary school students—an educational stage where conceptual frameworks are still forming—the BAQ was piloted with undergraduate astronomy students at the University of Cape Town. These students served as expert respondents, helping to evaluate the clarity and appropriateness of the questionnaire's language, content, and framing.

Ultimately, this project seeks to contribute to a more comprehensive understanding of how students across the globe make sense of core astronomy concepts and to promote pedagogical approaches that address persistent learning challenges in science education.

Primary authors: Dr MAKWELA, Tshiamiso (IAU Office of Astronomy for Education, University of Cape Town and Max Planck Institute of Astronomy); BROWN-SEVILLA, Samantha B.

Session Classification: Oral Presentation

Track Classification: Astronomy Curriculum