GIREP-EPEC
Transforming physics learning via Research & Practice
LEIDEN, 2025

Contribution ID: **66** Type: **Oral presentation**

Pre-service teachers' flexible use of classical and quantum ontologies during a Kundt's tube analogy assignment

Monday 30 June 2025 13:30 (20 minutes)

SER literature calls for a less formal approach to quantum mechanics education. We designed such a lesson based on Glynn's Teaching-With-Analogies model with Kundt's tube and a quantum well. We researched its implementation asking: What classical and quantum ontologies do Preservice Teachers use? Nine PSTs participated. Qualitative analysis of group dialogues revealed that the PSTs used five different ontologies in a flexible manner. Each group used specific subsets of ontologies across the comparative questions. The lesson and analysis effectively made PSTs preferred ontologies transparent. Implications for teacher training and possibilities for further studies are discussed.

Education level

Pre-service and in-service teacher education

Physics topic

Quantum mechanics

Research focus

Student conceptions / Preconceptions / Misconceptions

Research method

Educational design research (Qualitative research)

Organizing preference criteria

Physics topic

Author: Mr DE HAAS, Paul (Institute for Science Education, Radboud University)

Co-authors: Prof. BARENDSEN, Erik (Institute for Science Education, Radboud University); Dr STAMMES, Hanna (Institute for Science Education, Radboud University); Prof. DE REGT, Henk (Institute for Science in Society, Radboud University)

Presenter: Mr DE HAAS, Paul (Institute for Science Education, Radboud University)

Session Classification: Parallel oral presentations

Track Classification: Quantum education (QUANT)