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

Contribution ID: **100** Type: **Oral presentation**

When Assumptions Make the Difference: The Curious Case of the Mistreated Bernoulli's Equation

Tuesday 1 July 2025 16:10 (20 minutes)

This work examines widespread misconceptions about Bernoulli's equation, both in high school and university courses, where students and instructors often overlook the assumptions required for its correct application. By analysing the most common mistakes of Italian students taking part in Physics competitions, the work highlights how errors emerge, particularly in relation to assumptions like smoothness, steady flow, and irrotationality. The consequences of violating these assumptions are explored, such as incorrect conclusions or apparent paradoxes. Special attention is given to specific examples, such as the Magnus effect and the Heron's fountain.

Education level

Age over 18 (excluding teacher education)

Physics topic

Other

Research focus

Student conceptions / Preconceptions / Misconceptions

Research method

Mixed method (qualitative & quantitative)

Organizing preference criteria

Research focus

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Session Classification: Parallel oral presentations

Track Classification: Educational research methodology (METHOD)