



Contribution ID: 98

Type: **Oral presentation**

## **Engineering students' understanding of the core physical concepts in Mechanics and Electromagnetism: Has anything changed during pre-university education?**

*Thursday 6 July 2023 16:40 (20 minutes)*

Learning outcomes in engineering education, in addition to practical knowledge, include understanding concepts from natural sciences and mathematics as an important factor in strengthening engineering competencies and skills. The research was conducted using standardized conceptual tests in mechanics and electromagnetism among first-year undergraduate electrical and computer engineering students during several years. The data analysis of tests was performed by statistical methods (Classical test theory, Item response theory). The common "distractors" and levels of confidence in problematic tasks are discussed. The results indicate better understanding of concepts from mechanics, and difficulties in application of Newton's laws in the context of electromagnetism.

### **How would you like to present your contribution?**

Live in Košice (time slot to be allotted based on the programme)

### **Target education level (primary)**

Upper-secondary education

### **Target education level (secondary, optional)**

**Primary authors:** ŠTIBI, Ivana; Dr MIKOVIĆ, Željka (Faculty of Electrical Engineering, Computer Science and Information Technology Osijek)

**Presenter:** ŠTIBI, Ivana

**Session Classification:** Poster session 2

**Track Classification:** Innovative strategies and pathways to improve physics education at university