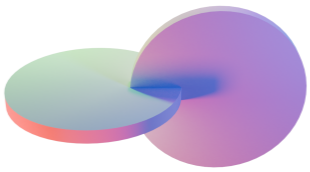

GIREP-EPEC
Transforming physics learning via Research & Practice
LEIDEN, 2025

Contribution ID: **72** Type: **Invited keynote**

The complexification of physics: Historical episodes and educational implications

Monday 30 June 2025 11:30 (1 hour)

Complex numbers were created (or discovered?) by Italian mathematicians in the 16th century as pragmatic tools to solve cubic equations, and not much attention was given to ontological questions about their "existence". However, this changed significantly in the end of the 18th century, when complex numbers were given a geometrical interpretation. Such concretization motivated physicists to use these numbers to model numerous phenomena, a process that has been called "complexification of physics"by Salomon Bochner. In this talk, different historical episodes will be presented, highlighting, in each case, how and why complex numbers became useful to physicists. Taken together, these examples provide a rather nuanced and pluralistic picture of the interplay between mathematics and physics, and its educational implications.

Education level

All ages

Physics topic

Interdisciplinary topics

Research focus

Other

Research method

Other

Organizing preference criteria

Track

Author: KARAM, Ricardo

Presenter: KARAM, Ricardo

Session Classification: Keynote speaker

Track Classification: Interplay of mathematics and physics (MATH)