

Plenary Talk

PLV V Wed 8:30 HSZ/AUDI

Reimagining Physics Education for a Planet in Transformation — ●GIULIA TASQUIER — Department of Physics and Astronomy, ALMA MATER STUDIRUM - University of Bologna, Bologna, Italy

The accelerating climate crisis intensifies the need to interpret complex evidence and act upon it. While physics and climate science offer foundations for understanding global warming, scientific knowledge alone does not suffice to support informed action. This plenary examines how physics education can help bridge this gap. Drawing on research in climate change education, I discuss how modelling, causal reasoning, and the epistemology of complex systems can strengthen students' understanding of climate phenomena and uncertainty in scientific prediction.

Insights from futures studies highlight the importance of anticipating alternative scenarios and moving beyond deterministic expectations. Integrating these perspectives supports what we define as agency: a capacity connecting scientific understanding with ethical reflection and imaginative anticipation. Empirical work shows that students engaging with complexity-based explanations expand their imaginative horizons and begin to position themselves as agents within complex climate futures. Activities such as exploring branching scenarios or reframing narratives of the climate crisis help them see the future not as fixed, but as a space of plurality, contingency, and imagination. The talk outlines a three-dimensional framework on agency to integrate these elements into physics education, reimagining it as a practice of freedom that turns complexity into a resource for imagination and solidarity.