Analogue Transformations in Physics and their Application to Acoustics

Prof. S. Carloni
University of Genova

When: Thursday 29 January 2026, 14:30 CET

Venue: Scuola Superiore Meridionale – Via Mezzocannone 8, Primo Piano

Abstract: Starting with the concept of transformation design for electromagnetic metamaterials, I will introduce Analogue Transformations, grounded in the principles of analogue gravity, and demonstrate how these transformations enable the construction of Analogue Transformation Acoustics. I will demonstrate that this formalism enables the design of acoustic devices that are unattainable through conventional methods and will present specific examples of such devices. Finally, I will argue that Analogue Transformations can be extended to additional domains, with potential applications in controlling quantum fluids and graphene electronics.

Bio: Sante Carloni (born 1977) is a physicist working in gravitational physics and its applications. He earned the Italian laurea (2000) and PhD (2003) at the University of Salerno. He held research fellowships in Cape Town (2004–2008), Barcelona (2008-2010), at ESA (2010–2013), and in Prague (2013-2014) with notable work on dark energy, perturbations, and metamaterials. He received an FCT Investigator grant at CENTRA/IST (2014-2019) and was an adjunct professor (Ricercatore tipo B) at the University of Genoa from January 2020 to December 2023. He is now an Associate Professor of Mathematical Physics at the University of Genova.

Event organized by the PhD program "Cosmology, Space Science & Space Technology", at the Scuola Superiore Meridionale, Naples, Italy.

Scientific Colloquium announcement

SSM
Scuola Superiore Meridionale

PhD SPACE
Cosmology, Space Science & Space Technology