Workshop on

"Hyperboloidal Foliations and their Application"

January 12 - 16, 2026

organized by

Roland Donninger (U of Vienna), David Hilditch (IST Lisboa), Maciej Maliborski (TU Vienna), Rodrigo Panosso Macedo (NBI, Copenhagen), Alex Vañó Viñuales (U de Les Illes Balears), Anil Colpan Zenginoglu (U of Maryland)

- **Monday, January 12th, 2026**

  09:00 – 09:15 **Registration**

  09:15 – 09:30 **Welcome**

  09:30 – 10:00 **István Rácz (WIGNER RCP, Budapest)**
  The asymptotic structure of spacetimes and hyperbolic formulations of the conformal Einstein equations

  10:00 – 10:30 **Coffee Break**

  10:30 – 11:00 **Salvatore Vultaggio (U of Otago)**
  Space-like Infinity and Energy Densities in GR

  11:00 – 11:30 **Jordan Marajh (QMU London)**
  A Melrosian perspective of Friedrich's cylinder at spatial infinity

  11:30 – 12:00 **Anil Colpan Zenginoglu (U of Maryland)**
  From Penrose to Melrose: Computing Scattering Amplitudes at Infinity

  12:00 – 14:00 **Lunch**

  14:00 – 14:30 **Joerg Frauendiener (U of Otago)**
  The geometry of null-infinity

  14:30 – 15:00 **Alexander Grant (U Southampton)**
  Coordinates near the horizon and null infinity in the Kerr spacetime

  15:00 – 15:30 **Valentin Boyanov (IST Lisboa)**
  Hyperboloidal foliations for the self-consistent evolution of semiclassical black holes

  15:30 – 16:00 **Coffee Break**

  16:00 – 16:30 **Public talk: The Hyperboloidal Research Network David Hilditch (IST Lisboa)**
  Hyperboloidal Foliations and their Application

- **Tuesday, January 13th, 2026**

  09:00 – 09:30 **Benjamin Leather (U Southampton)**
  Gravitational self-force with hyperboloidal slicing

  09:30 – 10:00 **Sebastiano Bernuzzi (U of Jena)**
  Hyperboloidal foliations in perturbation theory: The binary black hole mergers lab and gravitational-wave extraction

  10:00 – 10:30 **Coffee Break**

10:30 – 11:00 **Ariadna Ribes Metidier (NBI, Copenhagen)**
Black hole tomography: Unveiling the horizon geometry and dynamics by gravitational waves observations

11:00 – 11:30 **Oliver Long (MPIGP, Potsdam)**
Double the hype: Hyperbolic self-force calculations within a hyperboloidal framework

11:30 – 12:00 **Aditya Vaswani (U Southampton)**
Using comoving, hyperboloidal coordinates to model black hole scattering

12:00 – 14:00 **Lunch Break**

14:00 – 14:30 **Marina De Amicis (Perimeter Institute, Waterloo)**
Dynamical quasinormal mode excitation

14:30 – 15:00 **Patrick Bourg (Radboud U)**
Linear and nonlinear QNMs on a hyperboloidal slice

15:00 – 15:30 **Rodrigo Panosso Macedo (NBI, Copenhagen)**
Exceptional Points and Resonance in Black Hole Ringdown

15:30 – 16:00 **Coffee Break**

16:00 – 16:30 **Discussion: BHPT and GW modeling**

- **Wednesday, January 14th, 2026**

09:00 – 09:30 **Juan A. Valiente Kroon (QMU London)**
Perturbative solutions of the conformal constraint equations in General Relativity

09:30 – 10:00 **Anna Sancassani (U Tübingen)**
Evolution of geometric invariants on asymptotically hyperboloidal initial data sets

10:00 – 10:30 **Group Photo & Coffee Break**

10:30 – 11:00 **Piotr T. Chruściel (U of Vienna)**
On hyperbolic and holographic mass

11:00 – 11:30 **Károly Csukás (WIGNER RCP, Budapest)**
Controlling asymptotic charges of hyperboloidal initial data

11:30 – 12:00 **Philippe G. LeFloch (Sorbonne U, Paris)**
Nonlinear stability of Minkowski spacetime with massive Dirac fields

12:00 – 14:00 **Lunch Break**

14:00 – 14:30 **Corentin Vitel (U de Bourgogne, Dijon)**
Integrability in Hyperboloidal Scattering: Cauchy Structure and Extended Phase Space

14:30 – 15:00 **Andras Bonk (U of Vienna)**
Asymptotic stability of a large-data wave map after blowup

15:00 – 15:30 **Matthias Ostermann (Bielefeld U)**
Hyperboloidal foliations and stability of self-similar blowup in nonlinear wave equations

15:30 – 16:00 **Pre-dinner Coffee Break**

16:00 – 16:30 **Discussion: Geometry & PDE Analysis**

18:30 – 22:00 **Workshop Dinner**

- **Thursday, January 15th, 2026**

09:00 – 09:30 **After dinner recovery**

09:30 – 10:00 **Jose-Luis Jaramillo (U de Bourgogne, Dijon)**
Spectrum and evolution in black hole non-normal dynamics: the hyperboloidal key

10:00 – 10:30 **Coffee Break**

10:30 – 11:00 **Pedro H. Croti Siqueira (UFABC, Santo André)**
Probing the unstable spectrum of Schwarzschild-like black holes

11:00 – 11:30 **Lucas T. de Paula (UFABC, Santo André)**
Pseudospectrum of rotating analog black holes

11:30 – 12:00 **Christiana Pantelidou (UCD)**
Non-modal effects: Transient Superradiance

12:00 – 14:00 **Lunch Break**

14:00 – 14:30 **Jérémy Besson (U de Bourgogne, Dijon)**
Keldysh analysis of non-modal transient growth

14:30 – 15:00 **Marica Minucci (NBI, Copenhagen)**
Conserved Currents and Bilinear Forms for Quasinormal Modes in the Hyperboloidal Formalism

15:00 – 15:30 **Lionel London (KCL, London)**
Hyperboloidal slicing without geometry & a practical algorithm for QNM orthogonality

15:30 – 16:00 **Coffee Break**

16:00 – 16:30 **Discussion: BHPT Foundation**

- **Friday, January 16th, 2026**

  09:00 – 09:30 **Christian Peterson Borquez (IST Lisboa)**
  GHG formulation of GR on hyperboloidal slices with a 2+1+1 split of spacetime

  09:30 – 10:00 **Alex Vañó Viñuales (U de Les Illes Balears)**
  Hyperboloidal strong field initial data and 3D progress with BSSN/Z4

  10:00 – 10:30 **Coffee Break**

  10:30 – 11:00 **Shalabh Gautam (BIMSA, Beijing)**
  3D Summation-By-Parts Schemes on Hyperboloidal Slices

  11:00 – 11:30 **Brad Cownden (USC)**
  Hyperboloidal Foliations for Eccentric Orbits In Kerr Spacetime

  11:30 – 12:00 **Discussion: NR**

  12:00 – 14:00 **Lunch Break**

  14:00 – 15:00 **Free Discussion**

  15:00 – 15:30 **Wrap Up**

  15:30 – 16:00 **Farewell Coffee Break**

All talks take place at ESI Boltzmann Lecture Hall!