ipam institute for pure & applied mathematics

Scientific Overview

Research on mathematical and numerical aspects of general relativity link two vibrant fields which have become very influential in the wider mathematics and physics communities. The two fields have many points of contact: Some common goals shared by both rigorous mathematical analysis and numerics include understanding the formation of black holes in gravitational collapse, their non-linear stability, and their interaction with other black holes in binary systems or other scattering processes. The two fields often play complementary roles in applications to astrophysics such as gravitational wave detectors, spacetime singularities, asymptotically anti-de Sitter space-times, and recent activity on inverse problems. This workshop will gather mathematicians, theoretical physicists and numerical analysis developers to discuss these and other issues.

This workshop will include a poster session; a request for posters will be sent to registered participants in advance of the workshop.

Long Program Schedule

This workshop is part of the long program on "Name of Long Program Goes In This Section of the Poster."

- Opening Day : September 13, 2021
- Mathematical and Computational Challenges in the Era of Gravitational Wave Astronomy Tutorial : September 14 - 21, 2021
- Workshop I: Computational Challenges in Multi-Messenger Astrophysics : October 4 - 8, 2021.
- **Workshop II: Mathematical and Numerical Aspects of Gravitation : October 25 - 29, 2021.**
- Workshop III: Source Inference and Parameter Estimation in Gravitational Wave Astronomy : November 15 - 19, 2021.
- Workshop IV: Big Data in Multi-Messenger Astrophysics : November 29 -December 3, 2021.
- Mathematical and Computational Challenges in the Era of Gravitational Wave Astronomy Culminating Retreat at Lake Arrowhead : December 12 - 17, 2021

Participation

Additional information about this workshop including links to register and to apply for funding, can be found on the webpage listed below. Encouraging the careers of women and minority mathematicians and scientists is an important component of IPAM's mission, and we welcome their applications.

Organizers

Lydia Bieri (UMich), Matthew Choptuik (UBC), Mihalis Dafermos (Princeton University), Anne Franzen (Technical University of Lisbon), Antonio Marquina (University of Valencia), Igor Rodnianski (Princeton University), and Gunther Ulhmann (UW).

Speakers

Lydia Bieri (UMich), Matthew Choptuik (UBC), Katy Clough (University of Oxford), Mihalis Dafermos (Princeton University), Pau Figueras (Queen Mary, University of London), Grigorios Fournodavlos (Sorbonne University), Anne Franzen (Technical University of Lisbon), David Hilditch (University of Lisbon), Cécile Huneau (Polytechnic Institute of Paris), Pengyu Le (UMich), Jonathan Luk (Stanford University), Georgios Moschidis (UC Berkeley), Frans Pretorius (Princeton University), Igor Rodnianski (Princeton University), Anna Sakovich (Uppsala University), Yakov Shlapentokh-Rothman (Princeton University), Martin Taylor (Imperial College), Rita Teixeira da Costa (University of Cambridge), Gunther Uhlmann (UW), András Vasy (Stanford University), Robert Wald (University of Chicago), and Yiran Wang (Emory University).

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For more information, visit the program webpage:

www.ipam.ucla.edu/ W WS2