



Faculty Distinguished Lectures by Shaw Laureates

Gravitational Waves from Black Hole Clusters
by Prof. Roger Blandford &
The Mysterious Puzzle of Fast Radio Burst
by Prof. Victoria Kaspi



November 15, 2023 (Wednesday)



2:30pm – 4:00pm



CPD-1.24, Central Podium Levels –
One, Centennial Campus, HKU



Prof. Roger Blandford

*Shaw Laureate of
The Shaw Prize in Astronomy 2020*

Roger D Blandford is a Luke Blossom Professor in the School of Humanities and Sciences, and Professor of Physics and of Particle Physics and Astrophysics, Stanford University, USA. Roger is one of the most outstanding all-round theoretical astrophysicists of his generation who made major contributions to an extremely broad spectrum of astrophysical problems, arguably placing him among the rare group of “universal” scientists. His most important research contributions deal with the fundamental understanding of active galactic nuclei (AGN) and their relativistic jets.



Prof. Victoria Kaspi

*Shaw Laureate of
The Shaw Prize in Astronomy 2021*

Victoria M Kaspi is currently a Professor of Physics and Director of McGill Space Institute, McGill University, Canada. She received her Bachelor's degree in Physics from McGill University and obtained her MA and PhD in Physics from Princeton University, USA. At McGill, she held one of McGill's first Canada Research Chairs and she was named the Lorne Trottier Professor of Astrophysics in 2006. She is a member of the US National Academy of Sciences, the American Academy of Arts and Sciences and a Fellow of the Royal Society of London.

Abstract

Gravitational Waves from Black Hole Clusters

It is proposed that top heavy star clusters form in the nuclei of newly-formed galaxies and that these evolve to develop cores of stellar black holes. These cores collapse further under the influence of two body relaxation and radiative binary capture. A population of hard, black hole binaries, with increasing mass, evolves and should contribute to the observed binary merger events. In addition it is suggested that the cluster rotates and develops non-axisymmetric instability which can be responsible for coherent gravitational radiation in the nHz band, as recently reported. The evolution will end with the formation of a massive black hole binary followed by its merger to leave a single supermassive black hole, ready to accrete gas and form a quasar. Observable implications of this scenario will be discussed.

The Mysterious Puzzle of Fast Radio Burst

Fast Radio Bursts are a new astrophysical puzzle consisting of few-millisecond bursts of radio waves coming from cosmological distances. Prof. Kaspi summarized what is known about the FRB phenomenon, how they can be used as novel probes of the Universe's Large Scale Structure, and how the novel Canadian radio telescope CHIME is making significant progress in the field.



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