IJColloquium

Vendredi 5 avril 2024
10h30
Café accueil à 10h
Auditorium Pierre Lehmann-bât. 200

Gregory Ashton

(Royal Holloway,
University of London)

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completed his PhD in 2016 on timing variations in neutron stars: models, inference and their implications for gravitational waves. Following this, he held positions successively at the Albert Einstein Institute, Hannover, the Monash University in Australia and the Institute for Cosmology and Gravitation (ICG) at the University of Portsmouth before talking up his current post as lecturer at Royal Holloway, University of London. His research interest is the relativistic astrophysics of neutron stars and black holes. He si a member of the LIGO Scientific Collaboration and co-chair of the Collaboration's largest and most active observational science group, the Compact Binary Group.

Gravitational-wave astronomy : from interferometric strain to astrophysics

Gravitational-wave astronomy has unique potential to open up the dark universe and provide new insights into black holes, neutron stars, and the nature of the Universe itself. Despite the very recent emergence of this field the reconstruction of the source properties has very quickly reached a stage of maturity thanks to the development of Bayesiantechniques of inference, which open a wide range of scientific opportunities. I will begin with an overview of the field and the split between search and inference methods. I will then give an overview of the methodologies based on Bayesian inferences.
After this, I will discuss how these methodologies are applied and their importance to analysing signals, testing General Relativity and strong-field gravity, and providing information that is complementary to, but qualitatively different from, electromagnetic radiation of compact objets. Finally, I will end by talking about the future of the field as we transition to routine observation and the wider impacts.

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