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# 国台学术报告 NAOC COLLOQUIUM

## 2019 年 第 3 次 / No. 3 2019

**Time: Wednesday 2:30 PM, Mar.6th**    **Location: A601, NAOC**

## Gravitational Wave Astrophysics with the gravitational capture of compact objects by massive black holes

**Dr. Pau Amaro Seoane**

**Institute of Space Studies at the Universitat Autònoma de Barcelona**

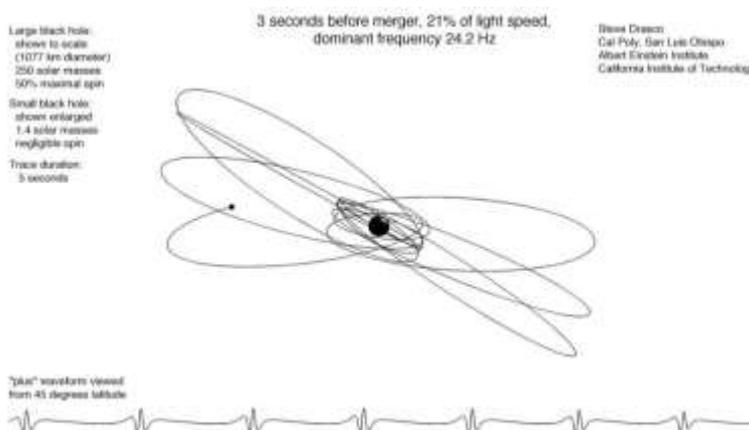


After completion of his Bachelor's in Theoretical Physics (Particle Physics) in Spain, Pau Amaro Seoane moved to Heidelberg to do a PhD in Theoretical Astrophysics, more precisely on dense stellar systems and the cosmic growth of supermassive black holes. Later, he moved to the the Max Planck Institute of Gravitational Physics in Potsdam (also called the "Albert Einstein Institute", AEI) to work with the director, Dr. Bernard Schutz and Dr. Curt Cutler on General Relativity, in particular on Gravitational Wave Astronomy. During his time in Barcelona, with Ignasi Ribas and Jordi Miralda-Escudé, he worked on the formation and evolution of protoplanetary disks, which later led to the development of a hybrid algorithm to study the formation and evolution of protoplanetary disks. He then received an offer from the AEI in Potsdam to be a Senior Scientist in 2008 and after successfully

raising a significant amount of third-party funding (i.e. not from the Max Planck Society), he created his own Gravitational Wave Astronomy group at the AEI to host his 4 postdocs and 3 PhD students. He obtained his habilitation at the University of Potsdam in 2016, and a docent title at the Technical University of Berlin, which means that he is entitled to teach there and officially supervise PhD astronomy students at the Zentrum für Astronomie und Astrophysik. In 2016 he got an offer to join the Institute of Space Studies located at the Campus of Universitat Autònoma de Barcelona thanks to a Ramón y Cajal fellowship. Their Gravitational Wave Astronomy Research and Technology group there has led the Spanish effort in the LISA Pathfinder mission and in the future LISA one. He also visits regularly the Kavli Institute for Astronomy and Astrophysics and the Academy of Mathematics and System Science in Beijing, where he is leading a group on Gravitational Wave Astronomy. His main research focus has been Gravitational Wave Astronomy since 2004.

### Abstract

In this talk I will give a general, broad description of the extreme-mass ratio inspiral problem, i.e. the gravitational capture of a stellar-mass compact object via loss of energy due to the emission of gravitational waves. This is one of the most interesting sources of gravitational waves to be detected in the future by a space-borne observatory such as LISA. My talk will mostly be focused on astrophysics but will include bits of general relativity as well. Time allowing, I will present a new source of gravitational waves, the so-called extremely-large mass ratio inspirals.



All are welcome ! Tea and coffee will be served at 2:15 PM.