



Contribution ID: 243

Type: **Invited talk in the parallel session**

Light in the dark: GW190521 as Proca star merger

Monday, 5 July 2021 16:30 (1 hour)

The detections of gravitational waves are opening a new window to the Universe. The nature of black holes and neutron stars may now be unveiled, but gravitational radiation may also lead to exciting discoveries of new exotic compact objects, oblivious to electromagnetic waves. In particular, Advanced LIGO-Virgo recently reported a short gravitational-wave signal (GW190521) interpreted as a quasi-circular merger of black holes, one at least populating the pair-instability supernova gap. We found that GW190521 is also consistent with numerically simulated signals from head-on collisions of two (equal mass and spin) horizonless vector boson stars (aka Proca stars). This provides the first demonstration of close degeneracy between these two theoretical models, for a real gravitational-wave event.

Primary author: Dr SANCHIS-GUAL, Nicolas (University of Aveiro)

Co-authors: Dr TORRES-FORNÉ, Alejandro (University of Valencia); Dr VAJPEYI, Avi; Prof. HERDEIRO, Carlos (Aveiro University, Portugal); Dr RADU, Eugen (Aveiro University); Prof. FONT, José A. (University of Valencia); Dr CALDERÓN BUSTILLO, Juan (University of Santiago de Compostela); Dr SMITH, Rory; Mr LEONG, Samuel H. W.

Presenter: Dr SANCHIS-GUAL, Nicolas (University of Aveiro)

Session Classification: Scalar Fields in Cosmology

Track Classification: Boson stars: Scalar fields in cosmology