

Physics Colloquium

Dr. Jacquelyn Noronha-Hostler

“What can we learn from heavy neutron stars?”

The observation of gravitational waves from a blackhole-mystery object binary opens the possibility for heavy neutron stars of 2.5 solar masses (potentially seen in GW190814). If this mystery object is a neutron star of 2.5 solar masses, it poses direct challenges to models of the equation of state. Interestingly, introducing non-trivial structure in the speed of sound sourced by changes in the degrees of freedom (possibly quarks) of ultra-dense matter can resolve this conflict, which may have large ramifications in nuclear and astrophysics. However, for a clear smoking gun signature of the mystery object being a neutron star, one requires a measurement of the tidal deformability that is non-zero. Because the predicted values are very small, a tenfold increase in sensitivity may be needed to test this possibility with gravitational waves, which is feasible with third generation detectors.

Dr. Jacquelyn Noronha-Hostler finished her PhD in Theoretical Physics at the Goethe University in Frankfurt in 2010. Following her Phd, she obtained a FAPESP postdoctoral fellowship at the University of Sao Paulo, followed by an Associate Research position at Columbia University, and a postdoctoral fellowship at the University of Houston. From 2017-2019 she was an Assistant Professor in the Physics and Astronomy Department at Rutgers University where she received the 2018 Alfred P Sloan Fellowship and the 2018 Department of Energy Early Career Award. In 2019 she joined the faculty at the University of Illinois Urbana Champaign as an Assistant Professor and is member of Illinois Center of Advanced Studies of the Universe (ICASU). She is currently on the executive committee for the American Physical Society's Division of Nuclear Physics and recently finished a 4 year term on the RHIC & AGS User's Executive Committee.

Thursday October 22th at 4:25 via Zoom

If you are outside the Lehigh Physics Department, please email Marina Long (mal516@lehigh.edu) for a link.