

## **Nuclear Astrophysics with Numerical Relativity:** David Radice

### **Abstract:**

Neutron star mergers and core-collapse supernovae are connected to some of the most pressing open questions in nuclear astrophysics, ranging from the physics of dense matter in neutron stars, to the origin of the heavy elements, to the mechanism powering stellar explosions. Multi-messenger observations of these events hold the key to unlock these mysteries. However, theory is needed to turn data into answers. In this talk, I will discuss our efforts to model neutron star mergers and supernovae in numerical relativity. I will talk about new developments in the simulation technology and recent results. Finally, I will talk about challenges and perspectives in this field.