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### **H. Witek: CSI: Gravity – investigating fundamental physics with black holes**

*Monday 19 December 2022 16:30 (15 minutes)*

The detection of 90 gravitational wave signals produced by coalescing black holes or neutron stars have opened a rich discovery space for astrophysics, fundamental physics and cosmology. In particular, they enable qualitatively new tests of gravity in its most extreme regime that unfolds when black holes collide. To link gravitational wave observations to the underlying theory of gravity we need accurate waveform models in and beyond general relativity. In this talk, I will give an overview of recent advances in simulating binary black holes in quadratic gravity theories, and I will highlight new dynamical phenomena that are absent in GR.

**Session Classification:** Session 4 A