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New Physics and the Black Hole Mass Gap

Monday 23 November 2020 16:00 (1 hour)

In this talk I will demonstrate the potential of the black hole mass gap to probe new physics. The mass gap, in which no black holes can be formed, is a standard prediction of stellar structure theory. I will show that new physics that couples to the Standard Model can act as an additional source of energy loss in the cores of heavy stars, dramatically altering their evolution, resulting in large shifts of the gap. I will also discuss how new contributions may modify the stellar equation of state. The gravitational wave observations by the LIGO/Virgo collaboration will bring the edges of the black hole mass gap in sight in the coming years, making this a promising novel probe of new physics.

Presenter: CROON, Djuna (TRIUMF)