



# PHYSICS AND ASTRONOMY SEMINAR

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## **“Cosmological signatures of the SM Higgs instability: Primordial Black Holes and Gravitational Waves”**

### Abstract

"For the current central values of the Higgs boson and top quark masses, the standard model Higgs potential develops an instability at a scale of the order of  $10^{11}$  GeV. This remarkable fact can be used to infer constraints on the Standard Model parameters and on the primordial epoch of the Universe.

As possible observational consequences, we show that cosmological signatures of such instability could be dark matter in the form of primordial black holes and the production of gravitational waves, sourced by Higgs fluctuations during inflation.

The existence of dark matter might not require physics beyond the Standard Model, and this hypothesis may find its confirmation through the detection of gravitational waves".

Friday, March 15, 2019

2:00 p.m.

HSD Building – Room A270