



Contribution ID: 127

Type: **Talk**

Imaging a boson star at Sgr A*

Tuesday, 8 December 2015 16:55 (20 minutes)

Near-future sub-millimetric VLBI observations of the surroundings of the Galactic center supermassive black hole, Sgr A, by the Event Horizon Telescope (EHT) will lead to unprecedented constraints on the nature of the accretion flow surrounding this compact object. One of the most fascinating goal of the EHT is to test the presence of an event horizon by imaging the black hole shadow, and to constrain the Kerr metric by measuring the so-called photon ring*.

The goal of my talk will be to present the first simulations of an accretion flow at Sgr A assuming that this compact object is no longer a black hole, but a boson star. Such an object is a long-studied alternative to black holes, which does not possess any event horizon, nor any singularity. I will show images and spectra of an accretion torus surrounding a boson star at Sgr A, and discuss the specific observational properties of rotating boson stars as opposed to Kerr black holes. I will focus in particular on the (im)possibility to demonstrate the existence of an event horizon from detecting Sgr A* shadow.

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Session Classification: 17 - Activity at the galactic center