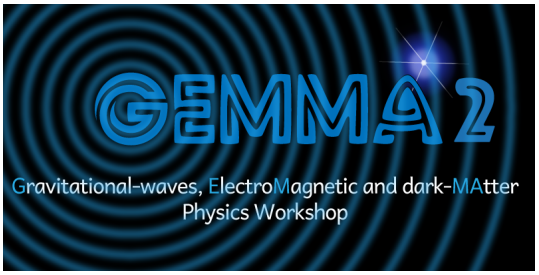

Contribution ID: **50** Type: **Contributed Talk**

Searching for dark matter signatures in the 21cm signal

Thursday, 19 September 2024 15:20 (25 minutes)

The 21cm signal is a promising observable that has the potential to probe uncharted regions of our Universe, thereby presenting an opportunity to challenge the standard model and perhaps discover new physics. In this talk I will discuss how we can exploit the spatial fluctuations in the signal to study exotic models of dark matter. I will focus on two popular dark matter candidates, fuzzy dark matter (FDM) and scattering dark matter (SDM). Despite the high uncertainty in the astrophysics that control the signal, our analysis shows that 21cm interferometers, such as HERA, will be sensitive enough to probe FDM and SDM in regions in the parameter space that haven't been ruled out by other observations. With the new cosmological tool we have developed, 21cmFirstCLASS, a merger of the well known codes 21cmFAST and CLASS, I will demonstrate how a joint analysis of 21cm and CMB can relax degeneracies between the cosmological parameters and improve their constraints considerably.

Primary author: FLITTER, Jordan (Ben-Gurion University)

Presenter: FLITTER, Jordan (Ben-Gurion University)

Session Classification: Dark Matter

Track Classification: Dark Matter