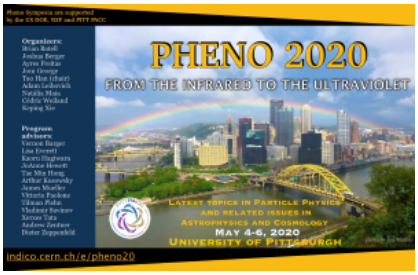


Contribution ID: **919** Type: **Parallel Talk**

# Searching for Dark Photon Dark Matter with LIGO

*Monday 4 May 2020 18:00 (15 minutes)*

Traditionally, Dark Matter (DM) searches are dominantly focused on GeV –TeV mass window. However, though these experiments have reached unprecedented detection sensitivities, the successes only resulted in a push for stronger limits on parameters. This forces people to keep their minds open on other DM candidates, especially in different mass regime. If DM particle is an ultralight gauge boson, i.e. dark photon, DM should be considered as a background field. With certain assumptions on its coupling to Standard Model particles, this DM background field could exert forces on test masses in gravitational wave detectors, resulting in displacements with a characteristic frequency set by the gauge boson mass. In this talk, I will discuss a novel strategy to hunt for such DM. I will also give more details about DM background simulation, the properties of DPDM signal and analysis method. The O1 results show that LIGO have the capability to make a 5σ discovery in unexplored parameter regimes.

## Summary

**Author:** Mr YANG, Fengwei (The University of Hong Kong)

**Presenter:** Mr YANG, Fengwei (The University of Hong Kong)

**Session Classification:** BSM II

**Track Classification:** Dark Matter