Contribution ID: **198** Type: **Oral**

Probing Dark Matter at LIGO and Beyond: Gravitational-Wave Fringes and More

What can we learn about the Dark Matter frontier with Gravitational-Wave (GW) observations at LIGO and future detectors?

We first introduce a new GW observable —GW Fringe —that allows LIGO alone to probe compact dark matter such as primordial black holes or dark stars. Furthermore, by augmenting LIGO with mid-frequency detectors, one can also probe various other dark matter kinds via yet other new ways. Such dark matter candidates include fuzzy axion-like dark matter and cosmic strings. A capability of ideal localization is a bonus of such broadband detection. All these new opportunities utilize the unique features of GWs from binary mergers.

The new opportunities will not only strengthen LIGO capabilities, but also motivate future mid-frequency detectors. And most importantly, they are precious new ways to understand the particle-physics nature of dark matter.

Primary author: Prof. JUNG, Sunghoon (Seoul National University)

Presenter: Prof. JUNG, Sunghoon (Seoul National University)

Session Classification: Dark Matter, Astroparticle Physics

Track Classification: Dark Matter, Astroparticle Physics