Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Dark Sirens to Resolve the Hubble-Lemaitre Tension[1] SSOHRAB BORHANIAN, ARNAB DHANI, Pennsylvania State University, ANURADHA GUPTA, University of Mississippi, K.G. ARUN, Chennai Mathematical Institute, B.S. SATHYAPRAKASH, Pennsylvania State University — The planned sensitivity upgrades to the LIGO and Virgo facilities could uniquely identify host galaxies of dark sirens—compact binary coalescences without any electromagnetic counterparts—within a redshift of $= 0.1$. This is aided by the higher order spherical harmonic modes present in the gravitational-wave signal, which also improve distance estimation. In conjunction, sensitivity upgrades and higher modes will facilitate an accurate, independent measurement of the host galaxy's redshift in addition to the luminosity distance from the gravitational wave observation to infer the Hubble constant H_0 to better than a few percent in five years. A possible Voyager upgrade or third generation facilities would further solidify the role of dark sirens for precision cosmology in the future.

[1]PHY-1836779

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Date submitted: 03 Jan 2021 Electronic form version 1.4