

Primordial black holes or else?

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Detecting a primordial black hole (PBH) would be an outstanding discovery with strong implications on cosmology, high-energy physics, and astrophysics. I will overview recent results about: I) individual-event searches for PBHs with gravitational-wave detectors; II) quantifying the evidence for PBHs in current data and with future detectors Einstein Telescope and LISA, using population studies. I will systematically discuss a comprehensive and interconnected list of discriminators that would allow us to rule out, or potentially claim, the primordial (vs astrophysical) origin of a binary (or population thereof) by measuring different parameters, including redshift, masses, spins, eccentricity, and tidal deformability.

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