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Primordial Black Holes - Positivist Perspective and Quantum Quiddity

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Primordial black holes are black holes that may have formed in the early Universe. Their masses potentially span a range from as low as the Planck mass up to many orders of magnitude above the solar mass. This, in particular, includes those black holes recently discovered by LIGO/Virgo/KAGRA, and (part of) these may conceivably be of primordial origin. After a general introduction on primordial black holes, I review the observational hints for their existence – from a variety of lensing, dynamical, accretion and gravitational-wave effects. As I will show, all of these (over 20) may be explained by a single and simple unified model, naturally shaped by the thermal history of the Universe. If time permits, I will comment on vorticity, which we recently conjectured to be a novel feature of (near-extremally rotating) black holes, this possibly yielding the very first astrophysical observable for quantum effects in these compact bodies.

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