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Primordial black holes and gravitational waves

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I will report the current progress in our works on the detection of primordial black holes (PBHs) with gravitational waves, including the transients and the stochastic background of gravitational waves (SGWB). The observations of gravitational waves by LIGO open a new window to probe the PBHs, which could be a viable candidate of cold dark matter. We find that the scenario of PBHs can explain the merger rates of GW200105 and GW200115, which were claimed to be neutron star-black hole binaries. As a second observational window, SGWB can be also capable of constraining the abundance of PBHs through observations of SGWBs from the coalescing binaries and the enhanced curvature perturbations.

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