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Spins of primordial black holes in a matter-dominated era

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In this talk, I will discuss the probability distribution of the spins of primordial black holes (PBHs) formed in a matter-dominated universe. For this evaluation, I focus on cosmological perturbations that follow a Gaussian distribution and examine their linear-order effects on the tidal torque they generate. By the time the fluid gravitationally collapses to form a PBH, nonlinear effects become significant. To account for these effects, I apply the Zel'dovich approximation. I also use peak theory, which describes the behavior of the Gaussian field, to evaluate the probability distribution of PBH spins. Additionally, I propose a threshold for fluctuations necessary for PBH formation based on the magnitude of the resulting spins.

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