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# Black Holes as New Dark Matter Factories

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We present a new general paradigm for the production of dark matter (DM) relic abundance, regurgitated DM, based on the evaporation of early Universe primordial black holes (PBHs) themselves formed from DM particles. We discuss a minimal realization of the model with dark sector in which a first-order phase transition results in the formation of Fermiball remnants that collapse to PBHs, which then emit DM particles. We show that the regurgitated DM scenario allows for DM over many decades in mass, including parameter space considered excluded. Further, we highlight how evaporating PBHs can serve as unique factories of sterile neutrinos in PBH sterile neutrinogenesis, which minimally couple only to active neutrinos. Contrary to the conventionally studied sterile neutrino production mechanisms, this novel mechanism does not depend on the active-sterile mixing. A unique signal is coincidence of induced gravitational waves associated with PBH evaporation and X-rays from sterile decays.

**Primary author:** TAKHISTOV, Volodymyr (QUP, KEK)

**Presenter:** TAKHISTOV, Volodymyr (QUP, KEK)

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