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Loop quantization of Schwarzschild interior revisited PARAMPREET SINGH, Louisiana State Univ - Baton Rouge, ALEJANDRO CORICHI, UNAM, Morelia, Mexico — Several studies of different inequivalent loop quantizations have shown, that there exists no fully satisfactory quantum theory for the Schwarzschild interior. Existing quantizations fail either on dependence on the fiducial structure or on the lack of the classical limit. Here we put forward a novel viewpoint to construct the quantum theory that overcomes all of the known problems of the existing quantizations. It is shown that the quantum gravitational constraint is well defined past the singularity and that its effective dynamics possesses a bounce into an expanding regime. The classical singularity is avoided, and a semiclassical spacetime satisfying vacuum Einstein's equations is recovered on the "other side" of the bounce. We argue that such metric represents the interior region of a white-hole spacetime, but for which the corresponding "white-hole mass" differs from the original black hole mass. We compare the differences in physical implications with other quantizations.

Parampreet Singh
Louisiana State Univ - Baton Rouge

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