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Point massive particle in General Relativity

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It is well known that the Schwarzschild solution describes the gravitational field outside compact spherically symmetric mass distribution in General Relativity. In particular, it describes the gravitational field outside a point particle. Nevertheless, what is the exact solution of Einstein's equations with \delta-type source corresponding to a point particle is not known. In the present
paper, we prove that the Schwarzschild solution in isotropic coordinates is the asymptotically flat static spherically symmetric
solution of Einstein's equations with \delta-type energy-momentum tensor corresponding to a point particle. Solution of Einstein's equations is understood in the generalized sense after integration with a test function. Metric components are locally summable functions for which nonlinear Einstein's equations are mathematically defined. The Schwarzschild solution in isotropic coordinates is locally isometric to the Schwarzschild solution in Schwarzschild coordinates but differs essentially globally. It is topologically trivial
neglecting the world line of a point particle. Gravity attraction at large distances is replaced by repulsion at the particle neighborhood.

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