

MA TH EM AT IC AL PH YS IC S SE MI NA R

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How much mass can you fit inside a sphere?

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Abstract

For almost half a century various researchers in General Relativity have studied the question of how much mass can be fit inside a sphere without creating a black hole or other singularity. The answer, not surprisingly, depends on the matter model and more specifically on the restrictions which it places on the energy-stress-momentum tensor. A variety of special cases are of particular physical interest. I will discuss a new method, developed with Paschalis Karageorgis, for solving such problems. This method recovers all previously known results and leads to a number of new ones.