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Hydrodynamic simulations of superdense fluid evolution in heavy-ion collisions

In extremely hot and dense circumstances nuclear matter no longer consists of neutrons and protons, but of individual quarks and gluons. On Earth, such a state of matter - quark-gluon plasma - can be reached in collisions of heavy nuclei at large energies. However, the expansion and cooling of this matter cannot be described by first-principles calculations, but phenomenological models must be used.

One approach is to model the quark-gluon plasma as a fluid. I will describe the physics of heavy-ion collisions, and the fluid-dynamical models used to describe them.

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