Contribution ID: **25**   Type: **Poster**

Relativistic perfect-fluid dynamics with spin

Monday, 21 May 2018 18:30 (0 minutes)

A new framework for relativistic hydrodynamics with spin is proposed. It is based on the conservation laws for charge, energy, momentum, and angular momentum. The conservation laws lead to hydrodynamic equations for the charge density, local temperature, and fluid velocity, as well as for the polarization tensor. The resulting set of differential equations extend the standard picture of perfect-fluid hydrodynamics with a conserved entropy current in a minimal way.

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Session Classification: Poster Session