

Evolution Equations for Elastic Fluid in General Relativity

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We develop a Lagrangian description for the evolution equations of a general relativistic elastic fluid body using orthonormal frames. It is required that the frame is Fermi-Walker propagated and coordinates are chosen such as to satisfy the Lagrange condition. It is showed that such a system is symmetric hyperbolic, which may be used to show local existence of solutions; we also prove the propagation of constraints. This paper may be considered an extension to the ideal fluid case, which has been considered by Friedrich (1998). This work is a result of collaboration between M. Normann and J. Valiente-Kroon.

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