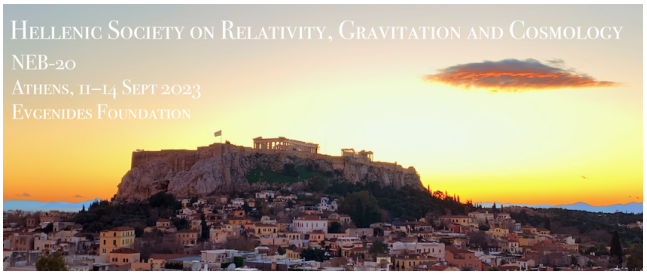

Contribution ID: **90** Type: **not specified**

Entropy as shock indicator for conservation laws

Thursday, 14 September 2023 17:20 (20 minutes)

Entropy is a physical shock detector. Entropy is only produced during irreversible processes, like shocks, therefore it can be used to flag and track highly non-smooth features present in the solution space of the problem we are investigating. In this talk, I will demonstrate how entropy can be employed in the design of a flux-limiter for a number of different problems that can be written in conservation form. I will show that this entropy based flux-limiting scheme effectively tracks the physical shocks during the evolution of a variety of different conservation laws (scalar equations, special and general relativistic hydrodynamics, binary neutron star mergers). Finally, I will present the first neutron star merger simulations with such a method and will demonstrate up to fourth-order convergence in the gravitational waveform phase.

Presenter: DOULIS, Georgios (FSU Jena)

Session Classification: Parallel Session A