Relativistic fluid flows on FLRW cosmological spacetimes. A geometry-preserving shock-capturing scheme

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We consider here a finite volume methodology for a first-order hyperbolic model of relativistic fluids. The main purpose of this research concerns the design and numerical implementation of geometry-preserving shock-capturing method for the relativistic fluid flows evolving on a curved geometry, which provides us with a robust framework in order to investigate the propagation and interaction of shock waves. In particular, our numerical method allows us to tackle the very challenging problem of the long-time asymptotic behavior of fluid flows in a curved geometry. More specifically, the geometry of interest here is the so-called *Friedmann–Lemaître–Robertson–Walker spacetime* which is the simplest, yet challenging, model for a homogeneous and isotrope cosmological spacetime.

Références

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