QUARK MATTER 2015
Sep. 27 – Oct. 3, 2015 Kobe, Japan

Contribution ID: **74** Type: **Poster**

# vHLLE, a code for hydrodynamic modelling of relativistic heavy ion collisions

*Tuesday 29 September 2015 16:30 (2 hours)*

We present vHLLE, a 3+1 dimensional relativistic hydrodynamic code for the simulations of quark-gluon/hadron matter expansion in ultra-relativistic heavy ion collisions. The code solves the equations of relativistic viscous hydrodynamics in the Israel-Stewart framework. In addition to energy and momentum, charge densities are explicitly propagated and included in the equation of state, making the code suitable for simulations of matter expansion with finite baryon density. With the help of ideal-viscous splitting, we keep the ability to solve the equations of ideal hydrodynamics in the limit of zero viscosities using a Godunov-type algorithm. Milne coordinates are used to treat the predominant expansion in longitudinal (beam) direction effectively. The results are successfully tested against known analytical relativistic inviscid and viscous solutions including viscous Gubser solution, as well as against existing 2+1D relativistic viscous code.

Ref: Iu. Karpenko, P. Huovinen, M. Bleicher, Comput. Phys. Commun. 185, 3016 (2014)

## On behalf of collaboration:

NONE

**Primary authors:** KARPENKO, Iurii (Frankfurt Institute for Advanced Studies); BLEICHER, Marcus (Uni Frankfurt); HUOVINEN, Pasi (Goethe-Universität)

**Presenter:** KARPENKO, Iurii (Frankfurt Institute for Advanced Studies)

**Session Classification:** Poster Session

**Track Classification:** Collective Dynamics