Xin Hao, J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C6-032



## Gravity/fluid correspondence around accelerated black hole

**Xin Hao**
Nankai University, China

In recent works, we found that a kind of Petrov type fluctuations could be mapped to a forced compressible viscous fluid in flat space of one less dimension. In these works we went beyond the framework of the bulk/boundary duality, and the relaxation of bulk/boundary restriction may possibly be a motivator and reminder of deeper understanding of the holographic principle, also we expect that this further generalization of the gravity/fluid correspondence could unearth more potentiality of gravity as a powerful tool in the study of fluid dynamics. Furthur, based on this works and by foliating the four-dimensional C-metric black hole spacetime, we consider a kind of initial value like formulation of the vacuum Einstein's equation, the holographic initial data is a double consisting of the induced metric and the Brown-York energy-momentum tensor on an arbitrary initial hypersurface. Then by perturbing the initial data that generates the background spacetime, it is shown that, in an appropriate limit, the fluctuation modes are governed by the continuity equation and the compressible Navier-Stokes equation which describe the momentum transport in non-relativistic viscous fluid on a flat Newtonian space. It turns out that the flat space fluid behaves as a pure vortex and the viscosity to entropy ratio is subjected to the black hole acceleration.

### Biography

Xin Hao is now a Doctoral student at Nankai University. His group have been researching in constructing holographic correspondence beyond the framework of AdS/CFT for years, His major interest is gravity/fluid correspondence, he has achieved some result in this area (JHEP 02(2015)030, PRD 96,046010(2017), Nuclear Physics B 921(2017)689-701), and received the National Scholarship.

Shanehowe@mail.nankai.edu.cn

**Notes:**