

1138-35-119

Dat T Cao*, Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX 79409, and **Luan T Hoang**, Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX 79409. *Long-time asymptotic expansions for solutions of Navier-Stokes equations with time-dependent forces.*

We study the large time behavior of solutions to Navier-Stokes equations with periodic boundary conditions in 3D. The body forces decay in time algebraically. The asymptotic expansions of Foias-Saut-type for all Leray-Hopf weak solutions are obtained. We show that if the force has an asymptotic expansion, as time tends to infinity, in terms of negative-power functions in Gevrey spaces, then any weak solution admits an asymptotic expansion of the same type. This is an extension of Foias-Saut's results for the case of potential forces in Sobolev spaces. (Received February 06, 2018)