



Seminar of the Work Group  
Nonlinear Partial Differential Equations  
WS 23/24

**December 5th, 2022, 12:30 - 13:00**  
**Seminar room: SR 3.061**

## Exponential Decay Estimates of Navier-Stokes System

Shan Wang, UPEC

### **Abstract**

We are concerned with the isentropic compressible Navier-Stokes system in the two-dimensional torus, with rough data and vacuum. Arbitrary regions of vacuum are admissible, and no compatibility condition is required. Under these assumptions and for large enough bulk viscosity, global solutions have been constructed by R. Danchin and P.B. Mucha (CPAM, 2023). We establish that these solutions converge exponentially fast to a constant state, and specify the convergence rate in terms of the viscosity coefficients. On the other hand, we prove similar exponential decay results for the solution of the inhomogeneous incompressible Navier-Stokes equations on torus.