

Seminar of the Work Group  
Nonlinear Partial Differential Equations  
SS 22

**Speaker: Associate Professor Xuefeng Liu**  
**May 31st, 2022, 14:00 - 15:00**  
**Seminar room: 3.061**

## Rigorous eigenvalue bounds of differential operators using finite element methods and their application

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### **Abstract**

I will first introduce recent results about rigorous bounds for eigenvalues of differential operators by using Finite Element Methods. As one of the applications of rigorous eigenvalue bounds, I will discuss the eigenvalue bounds of the Stokes operator and report the latest the computer-assisted proof of the stationary solution to the Navier-Stokes equation over 3D non-convex domains.

Related papers:

- Survey paper on eigenvalue bounds for differential operators: <https://doi.org/10.1016/j.cam.2019.112666>
- Solution verification for the Navier-Stokes equation over 3D domains: <https://doi.org/10.1016/j.cnsns.2021.106223>