

The Institute of Applied Dynamics (LTD) in the Department of Mechanical Engineering of the Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), is offering at the earliest possible time, positions for

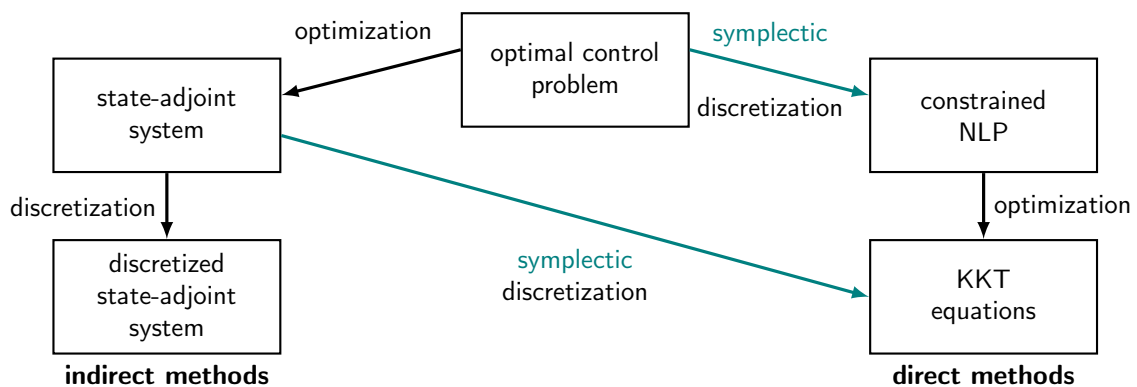
## doctoral researcher / postdoc

with topic related to

### Symplectic discretizations for optimal control problems in mechanics

#### subject

The optimal control of mechanical problems is omnipresent in our technically affected daily living (industrial or medical robots, trajectory planning for space missions, motion planning in sports or rehabilitation, etc.). As analytical solutions of optimal control problems are in general not available, applications rely on numerical simulations. In the project direct and indirect numerical methods are investigated. The main difference between the two approaches is the order in which the discretization and the optimization step takes place. We focus on symplectic methods which provide a link between direct and indirect approaches. Furthermore, mechanical systems can be described by Lagrangian and Hamiltonian dynamics which are also considered in the project.



To learn more about LTD's infrastructure, projects, publications, structural environment and cooperation partners, please visit <https://www.ltd.tf.fau.de>.

#### qualifications

- highly motivated applicants with qualifications in applied mathematics, physics, engineering or similar fields are invited
- profound knowledge in numerical methods and programming skills (e.g. Matlab, Python)
- knowledge in differential geometry and optimal control problem is of advantage
- good written and verbal communication skills in English (German desirable)

We offer a stimulating, interdisciplinary research environment within an enthusiastic and diverse team. The FAU emphatically invites qualified female researchers to apply. Severely disabled applicants with equal aptitude will be given preferential consideration.

Remuneration is based on the collective agreement for civil servants in Germany (TV-L). Please send your application with the usual documents (CV, degree certificates, short summary of research interests, possibly references and publications list), until 15.12.2023, via e-mail in pdf-format to:

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