# A U S H A N G

FREIE UNIVERSITÄT BERLIN
**Fachbereich Mathematik und Informatik**

Promotionsbüro, Arnimallee 14, 14195 Berlin

# D I S P U T A T I O N

## Mittwoch, 15. Juli 2026, 11:00 Uhr

**Ort: Raum 006 & WebEx**
**(Fachbereich Mathematik und Informatik, Königin-Luise-Str.24-26, 14195 Berlin)**

**Disputation über die Doktorarbeit von**

## Yue Yao

**Thema der Dissertation:**
## Long-term Traffic Scene Prediction via Polynomial Representations in Autonomous Driving

**Thema der Disputation:**
## Modern Weather Forecasting: From Physical Simulation to Data-Driven Models

Die Arbeit wurde unter der Betreuung von **Prof. Dr. D. Göhring** durchgeführt.

Abstract: Weather forecasting is a central application of modern computational science and has traditionally been based on deterministic simulations of atmospheric physics. Recent advances in machine learning have led to new forecasting systems, which achieve high accuracy and efficiency by learning directly from data. This presentation introduces the evolution of weather forecasting methodologies, from physics-based simulation to data-driven models. It discusses key differences between these approaches, including computational requirements, representation of complex systems, and the handling of uncertainty. Using recent AI-based models as examples, the talk highlights both the potential and the limitations of deep learning in scientific applications. The presentation concludes with a discussion of how these developments may influence future approaches to modeling complex real-world systems.

Die Disputation besteht aus dem o. g. Vortrag, danach der Vorstellung der Dissertation einschließlich jeweils anschließenden Aussprachen.

## Interessierte werden hiermit herzlich eingeladen

Der Vorsitzende der Promotionskommission
Prof. Dr. D. Göhring