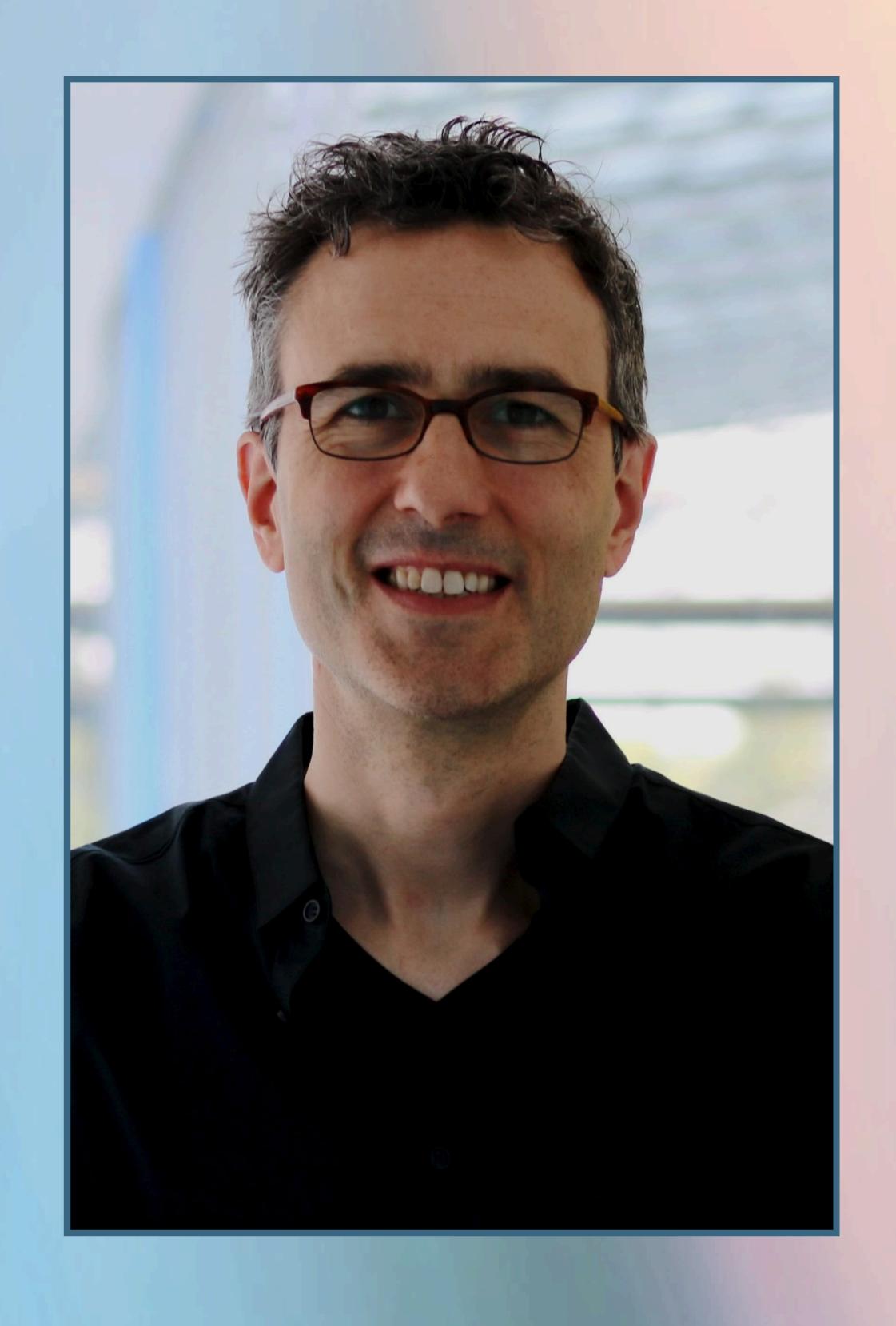


FAU MoD Lecture Series



Al Components in PDE Solvers

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TECHNICAL UNIVERSITY OF MUNICH



WWW.MOD.FAU.EU

#FAUMoDLecture

WHEN

Monday, November 10, 2025 16:00H (Berlin time)

WHERE

On-site / Online

Friedrich-Alexander-Universität
Erlangen-Nürnberg (FAU)
Room **H20**. ER - Südgelände
Technische Fakultät
Cauerstraße 5b, 91058
Erlangen Bavaria, Germany

Live-streaming: https://www.fau.tv/clip/id/59621

In this lecture, I will talk about recent advancements from the area of Al and deep learning for physics simulations. A key focus is the utilization of numerical solvers capable of providing gradient information, i.e. "differentiable simulators". These solvers seamlessly integrate with deep learning algorithms, presenting numerous advantages in arising from Al-based components in solvers, particularly in the context of flow simulations. However, the availability of gradient computation is not ubiquitous in many existing fluid simulation environments. Consequently, I will demonstrate a strategic approach to leverage non-differentiable simulators, serving as an interesting transitional step and a middle ground in this context. The resulting, trained neural networks provide flexible computational components in physics solvers for varied applications such as closure modeling, accelerated solving and inverse problems.