## Mathematisches Institut
## der Universität Bayreuth

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# VORTRAGSANKÜNDIGUNG

Im Rahmen unseres gemeinsamen Oberseminars

„Numerische Mathematik, Optimierung und Dynamische Systeme"

spricht

Frau **Dr. Evelyn Herberg**
Scientific Computing and Optimization, Universität Heidelberg

**am Donnerstag, 08.12.2022, 14.30 Uhr s.t.**

über das Thema

"Learning the time step size in Deep Neural Networks"

*Abstract*:

*The Feature propagation in Deep Neural Networks (DNNs) can be associated to nonlinear discrete dynamical systems. Here, we are defining the discretization parameter (time step-size) to be an additional variable in the DNN. Hence, the time step-size can vary from layer to layer and is learned in an optimization framework. The proposed framework can be applied to any of the existing networks such as ResNet, DenseNet or Fractional-DNN. This framework is shown to help overcome the vanishing and exploding gradient issues. To illustrate the advantages, the proposed approach is applied to an ill-posed 3D-Maxwell's equation.*

Das Oberseminar findet im S 131, Gebäude NW III statt.

gez. Anton Schiela