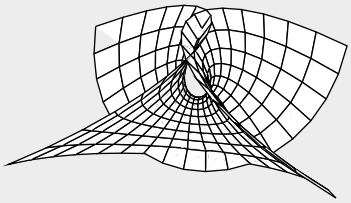

Oberseminar
Mathematische
Strömungsmechanik

Institut für Mathematik der Julius-Maximilians-Universität Würzburg

Hyperbolic equations - structure preserving methods & other topics

Bruno Després

Université Paris 6, France

Neural Networks and numerical analysis of PDEs

Abstract:

Neural Networks have intriguing connections with numerical analysis of PDEs and have potential in scientific computing. In particular the power of depth can be explained with the Takagi function which is somehow related to the Finite Element Method, see Yarotsky 2017, Daubechies/.../Petrova 2019, Joost/.../Schwab 2020.

We will present a recent result Després-Ancellin 2020 which extends the Takagi aproach to univariate polynomials, by means of a new simple fixed point equation, the solution of which is easily implemented in a NN with the ReLU activation function.

Application to the Finite Volume discretization of the 2D (hyperbolic) advection equation will be discussed in the final part.

via Zoom video conference (request the Zoom link from klingen@mathematik.uni-wuerzburg.de)

Friday, Jan.. 8 at 3 pm

Zu diesem Vortrag sind Sie herzlich eingeladen.

gez. Christian Klingenberg