



universität  
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Fakultät für Mathematik

## EINLADUNG

zu

einem didaktischen Vortrag

im Rahmen der Habilitation von

**Dr. José Alberto Iglesias Martínez**

(Fakultät für Mathematik, Universität Wien)

**“Some instances of compactness in function spaces”**

## **“Some instances of compactness in function spaces”**

### Abstract:

*An important property of Euclidean space is the Heine-Borel theorem: its bounded and closed subsets are compact. It allows, for example, to prove that any continuous function on such a set attains its maximum and minimum.*

*But what happens when instead of for an optimal point we are looking for an optimal function, like with physical models in which an energy is minimized? Most useful spaces of functions are not finite dimensional, and bounded closed subsets are not necessarily compact in their natural topologies. To recover compactness, one needs to either accept additional assumptions, or switch to a weaker topology to make finding limits easier.*

*In this talk we choose the first route and present some basic such compactness results, the Arzelà-Ascoli theorem for continuous functions and the Fréchet-Kolmogorov-Riesz theorem for  $L^p$  functions. The usefulness of this type of compactness theorems is illustrated with some applications to the minimization of integral functionals.*

**Mittwoch, 13. Jänner 2021,  
13:00 Uhr**

**via Zoom**

<https://zoom.us/j/98542342106?pwd=a2srcnU3MTN1SldiWXJtSjJPTTN3UT09>

Meeting ID: 985 4234 2106

Passcode: 0fLA7X

Ilaria Perugia