



universität  
wien

Vienna Doctoral School in Physics

ESI

Erwin Schrödinger International Institute  
for Mathematics and Physics

# Machine Learning for Materials Hard and Soft

ESI-DCAFMTACO-VDSP Summer School 2022

11–22 July 2022

ESI, University of Vienna

Modern machine learning (ML) approaches are opening up new possibilities to model, understand, design and discover materials. In this summer school participants will gain an understanding of various ML methods and learn how to apply them to hard and soft materials.

## Introductory Lectures & Hands-on Exercises

### Mathematical introduction

Philipp Grohs (U Vienna)

### Image analysis

Thomas Pock (TU Graz)

### ML for electronic structure

James Spencer & David Pfau (Deep Mind)

### ML potentials

Philipp Marquetand (U Vienna)

### Statistical sampling

Peter Wirnsberger (Deep Mind)

### Free energies and enhanced sampling

Luigi Bonati (ETH & IIT Genova)

### Materials properties prediction

Taylor D. Sparks (U Utah)

## Research Talks

Cecilia Clementi (FU Berlin)  
Andrew Fergusson (U Chicago)  
Marjolein Dijkstra (U Utrecht)  
Milica Todorovich (U Turku)  
Reinhard Maurer (U Warwick)  
Adam Foster (Aalto U)

## Case Studies

### Application deadline

26 April 2022

[vds-physics.univie.ac.at/  
summer-school-2022](https://vds-physics.univie.ac.at/summer-school-2022)

