

Nonsmooth Problems with Applications in Mechanics  
Bedlewo, Poland, June 17-22, 2023

## Application of Machine Learning to Physical Simulations and Contact Mechanics

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**Abstract:** In recent years, many approaches have been proposed to integrate machine learning techniques into physical simulations. Physics-informed neural networks (PINNs) are one such method that can leverage the knowledge of any physical laws along with measurement data in the learning process. Deep learning models called autoencoders can be used to perform sophisticated model reduction to increase simulation speed. Graph neural networks (GNNs) are another family of models that can operate on graph-structured physical data that can represent molecules and their interactions, or solid bodies as meshes. In this talk, we will present a survey of some applications of machine learning to physical simulations and mechanical contact problems.