

STRUCTURE-PRESERVING SCIENTIFIC MACHINE LEARNING AND NEURAL NETWORKS

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ABSTRACT

In the past few years machine learning techniques have increasingly been employed for solving problems in scientific computing, i.e., the approximation of differential equations. Such efforts are now commonly referred to as “scientific machine learning” [1]. Just as with classical numerical methods, it has been observed that scientific machine learning benefits from preserving structural properties of the differential equations, e.g., symplecticity [2] and symmetries [3].

This minisymposium invites speakers to present work on preserving geometric structure in machine learning models for applications like system discovery from experimental [4] data and reduced order modeling [5, 6]. Presentations can encompass novel algorithms as well as software implementations and comparisons of existing approaches.

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