ADVANCES IN COMPUTATIONAL METHODS FOR DATA-DRIVEN INVERSE PROBLEMS AND IMAGING 1700 - DATA SCIENCE AND MACHINE LEARNING

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ABSTRACT

Inverse problems are ubiquitous in science and engineering, and as such, have been solved by ad hoc methods throughout the history of those subjects. More recently, however, the systematic study of inverse problems has revealed a number of unified approaches. These include, for example, computational formulations specifically tailored to inverse problems, novel optimization algorithms, and computational approaches within probabilistic formulations. New data modalities and novel sensing configurations continue to drive the field and reveal new facets for computational consideration. This will constitute one theme for this minisymposium, with focus on recent advances in computational methods for imaging, material characterization, detection and identification from far or diffuse field and optimization, among other topics.

In addition, recent advances in reduced-order modeling as well as the emergence of promising machine learning algorithms shed a new light in this area, in particular in connection to the field of *big data* and regularization. Discussion of these innovative approaches is also welcome.

In this multi-session minisymposium, experts in computational techniques for data-driven inverse problems and imaging will discuss recent advances in the field. Although the presentation of work in diverse fields of application is welcome, an emphasis will be placed on general principles and on the computational aspects of the techniques discussed.