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MATHEMATICAL MODELING AND CAUSAL INFERENCE APPLIED TO INDUSTRIAL AND SOCIETAL PROBLEMS

HIROSHI SUITO*

*Advanced Institute for Materials Research, Tohoku University
2-1-1 Katahira, Aoba-ku, Sendai, 980-8577, Japan
hiroshi.suito@tohoku.ac.jp
https://www.wpi-aimr.tohoku.ac.jp/suito_labo/

ABSTRACT

In this session, reports of several collaborative experiences between the mathematics community and industry will be presented. Their broadly diverse techniques, ranging from mathematical modelling using computational simulations to causal inference using machine learning, constitute fundamental components of these collaborations to elucidate and resolve real-world problems. The topics addressed in this session include the following.

- Materials design and materials informatics
- Human network analysis
- Medical sciences and clinical practice
- Future transportation problems
- Disaster controls and evacuation planning

In addition to individual efforts undertaken to resolve difficulties in different fields of application, mathematical approaches sometimes provide novel perspectives for apparently different problems. Moreover, not only are interactions between researchers from academia and industry improved; the fostering of researchers from younger generations also fills an important developmental role in these fields. Such activities will also be reported in this session.