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2nd International Conference of the DFG International Research Training Group 2057 – Physical Modeling for Virtual Manufacturing

iPMVM 2020, November 16–18, 2020, Schloss Dagstuhl, Wadern, Germany (Virtual Conference)

Edited by

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Preface

The International Research Training Group 2057 "Physical Modeling for Virtual Manufacturing Systems and Processes" funded by the German Research Foundation (DFG) is aimed at enabling the planning of production processes on a new level by incorporating computational and physical models. Computer models are already in use to plan production processes ranging from a single machine to a complete factory; however, these models are lacking a description of the physical properties and processes involved and thus are of limited accuracy and predictive power. In the envisioned new generation of models that include physical aspects, it will be possible to calculate key properties of a production line, such as the quality of the products or the energy consumption of a factory, in advance, and to perform targeted improvements. Within IRTG 2057, the physical interactions of the three levels factory, machine and process are considered. Toward this goal, the research agenda is driven by fundamental problems in both engineering and computers science, as well as by the integration of both. As an international program, IRTG 2057 brings together investigators and students from the three partner universities Technische Universität Kaiserslautern, University of California Davis, and University of California Berkeley.

This volume contains the proceedings of the 2nd International Conference of the IRTG 2057, conducted November 16-18, 2020 in a virtual setting. The topics considered at the conference mirror IRTG 2057's research focus. The 19 contributions contained within this book underwent a two-stage, rigorous review by an international program committee. Submitted papers were accepted for presentation at the conference, and subsequently reviewed again before final acceptance.

We would like to express our immense gratitude to all authors that submitted a paper and the members of the program committee for their diligent work. Finally, we are indebted to the German Research Foundation (DFG, Deutsche Forschungsgemeinschaft) for continued funding and support under contract number 252408385.

February 2021

Christoph Garth, Jan C. Aurich,
Barbara Linke, Ralf Müller, Bahram Ravani
Gunther H. Weber, Benjamin Kirsch

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