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Mathematical Aspects in Non-equilibrium Thermodynamics

Edited by: Róbert Kovács , Patrizia Rogolino and Francesco Oliveri

Non-equilibrium thermodynamics is a relatively new field of research, and one which is also becoming increasingly important in engineering applications. However, despite the many approaches developed in recent decades, they all raise questions from a mathematical point of view, for instance on the proper definitions of initial and boundary conditions, analytical and numerical solution methods, and geometrical background. These questions cover numerous topics, including the mathematical analysis of various thermodynamic approaches, the investigation of the resulting governing equations, symmetry analysis of the solutions, and how the numerical methods can be built on the geometrical background. The aim of this Special Issue is to discuss and present up-to-date problems that may not be constrained to the previously mentioned aspects but must be connected to non-equilibrium thermodynamics. Thus, in the present Special Issue we aim to present the open mathematical questions on and characteristics of different thermodynamic approaches.

