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COMPUTATIONAL MODELS FOR LIQUID-VAPOR FLOWS 600

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ABSTRACT

Multiphase liquid-vapor flows such as cavitating flows, boiling and flashing flows are found in a large variety of industrial and technological processes in numerous areas of engineering. These flows often are characterized by complex phenomena such as vapor cavities growth and collapse, interfaces and shock formation. Important advances have been made in computational methods for the simulation of these multiphase flows, based on various mathematical and physical models and different numerical approaches, e.g. [3, 2, 1]. Yet there are many open challenges towards the accurate prediction of these flows in realistic configurations. First, there is a need for models and methods allowing a more precise description of the flow physics and thermodynamics. This includes for instance the development of efficient numerical models accounting for accurate equations of state, metastable states, interphase transfer of variable relaxation rate, surface tension effects. Furthermore, the simulation of realistic problems demands time-affordable computational tools applicable to multi-dimensional complex geometries and to a large range of Mach number regimes. The aim of this minisymposium is to bring together scientists working on computational models for liquid-vapor flows to share and exchange ideas, discuss challenges, new trends and innovative methods in the field. The minisymposium will be open to a broad spectrum of modelling techniques and numerical approaches.

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