TECHNISCHE UNIVERSITÄT DRESDEN

Institut für Strömungsmechanik, Professur für Strömungsmechanik

Vortrag

Interface Tracking Simulations of Two-phase Flows

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The presented talk outlines the progress in the recent years of the high-resolution single and two-phase flow simulations of reactor-relevant flows. Rapid development of high-performance computing capabilities creates exciting opportunities to study complex reactor thermal hydraulic phenomena in future years. Today's advances in thermal hydraulic analysis, machine learning techniques and interface resolved simulations will help pave the way to the next level of understanding of two-phase flow behavior in complex geometries. This discussion includes two major parts: (i) history and review of interface tracking simulations for nuclear thermal hydraulics in recent years and (ii) several opportunities to apply those advanced tools in the future. First part will discuss typical computational methods used for those simulations, provide some examples of the past work, as well as computational cost estimates and affordability of such simulations for research and industrial applications. In the second part some specific examples are discussed which could be analyzed using exascale supercomputers being designed and projected to be online in the next several years. New generation methodologies are required in order to take full advantage of those capabilities to greatly enhance the scientific understanding of complex two-phase flow phenomena in nuclear reactors under normal operation and postulated accident conditions.

Termin: **28.10.2019, 15:00 Uhr**
Ort: **Zeuner-Bau, Raum 252**

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