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Ph.D., Aerospace Engineering and Engineering Mechanics, University of Cincinnati, Cincinnati, Ohio, 2006
M.Tech., Mechanical Engineering, Indian Institute of Technology, Kanpur, India, 1999
B.E., Mechanical Engineering, Jadavpur University, Calcutta, India, 1997

Dr. Das is a research engineer in the Geosciences and Engineering Division where he performs quantitative modeling of fluid dynamics and heat transfer. His research includes reservoir mechanics, fluid flow in engineered systems, and unsaturated zone flow paths for the high-level nuclear waste repository proposed by the U.S. Department of Energy for Yucca Mountain, Nevada. He has broad expertise in computational modeling of fluid flow and heat transfer.

Dr. Das conducts simulations of moisture transport and heat transfer in the drift and vapor flow analyses through rubble at the potential high-level radioactive waste repository at Yucca Mountain. He also analyzes natural convection in the vicinity of waste packages along with moisture transport and condensation in the drift. Furthermore, he conducts multiscale turbulence modeling for flow through rod bundles and simulation of lower plenum flows that are relevant to high-temperature gas-cooled reactors. He also investigates natural convection flow and heat transfer for spent fuel canisters using computational fluid dynamics.

Before joining the Geosciences and Engineering Division at Southwest Research Institute, Dr. Das graduated from the University of Cincinnati with a Ph.D. in Aerospace Engineering and Engineering Mechanics. During his graduate studies, he worked on a number of projects funded by government agencies and private industries. Dr. Das developed a methodology for numerical simulation of icing on the low pressure compression subsystem in commercial high bypass turbofan engines. The research work involved simulation of multiphase flow using the Eulerian-Lagrangian method, parallel computing, and well-known ice prediction tools like LEWICE. He also conducted aeroacoustic analysis of cavity flows and active flow control. Research in this area involved numerically simulating unsteady flow in a Hartmann-Sprenger tube and utilizing it as an actuator to achieve broadband and tonal noise reduction in high-speed flows. Dr. Das participated in an investigation of gas-solid two-phase flow through turbomachinery blade passages and surface degradation by erosion. This research involved high fidelity numerical simulation of rotating engine components and numerical modeling of particle trajectories and erosion processes. Dr. Das modeled turbomachinery flows, developed codes for aerothermal investigation of stators and rotors, performed computational fluid dynamics analysis of heat transfer in cascades, and conducted film cooling studies in turbine inlet guide vanes.

PROFESSIONAL CHRONOLOGY: Indian Institute of Technology, graduate teaching assistant, [1998–2000]; University of Cincinnati, graduate teaching and research assistant [2000–2005]; Southwest Research Institute, research engineer [May 2006–present].

PROFESSIONAL MEMBERSHIPS: American Society of Mechanical Engineers, American Institute of Aeronautics and Astronautics, American Nuclear Society.

July 2008