

Multiphysics Simulations: Challenges and Opportunities

Carol S. Woodward, Lawrence Livermore National Laboratory

In this talk I will overview a survey paper developed from the DOE-sponsored Institute for Computing in Science Workshop on “Multiphysics Simulations: Challenges and Opportunities.” In this paper, we considered multiphysics applications from algorithmic and architectural perspectives where “architectural” included both software and hardware environments. In this talk, I will overview the main sections and findings of the paper including common practices in multiphysics application simulation technologies, mathematical algorithms, and software practices. I’ll then discuss some of the challenges and opportunities we identified and end with various ways breakthroughs can be inserted into multiphysics simulations with some observations of best practices.