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Title: Nuclear Data, Computing and Optimization in Nuclear Applications

Abstract:

Nuclear Data, Computing and Optimization are truly crosscutting themes in all aspects of nuclear security and nonproliferation. Nuclear data is fundamental to predictive modeling and simulation. Further, at the precipice of the exascale computing era, computation and optimization methodologies will efficiently utilize increased complexity in supercomputer architectures to advance monitoring, characterization, safeguards, controls, and design of nuclear systems. Dramatic increases in simulation capabilities and computational methods (e.g. AI/ML) will accelerate the pace of scientific discovery in fundamental sciences and assist engineers in designing and optimizing nuclear security and non-proliferation systems with drastically improved performance, safety, and efficiency.