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Basic Nuclear Physics Research Needs for Nuclear Energy

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Basic nuclear physics research will play a central role in the development of the future nuclear facilities. Federal requirements for higher efficiencies, lower operating and construction costs, and advanced safeguards can all be impacted by the quality of nuclear data used in the fuel cycle calculations for design and licensing. Uncertainties in the underlying nuclear data propagate to uncertainties in integral and operational parameters, which drive margins and cost. Department of Energy (DOE) programs are underway to help develop the necessary nuclear research infrastructure. The Nuclear Energy office of DOE leads the development of new nuclear energy generation technologies to meet energy and climate change goals and advanced, proliferation resistant nuclear fuel technologies that maximize energy from nuclear fuel, while maintaining and enhancing the national nuclear infrastructure. These activities build on important work started over the last three years to deploy new nuclear plants in the United States by early in the next decade, and to develop advanced, next-generation nuclear technology. In this talk, I will discuss some of the foreseen opportunities and needs for basic nuclear research in nuclear energy.