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A Simulation Resource Team for Innovative Fusion Concepts in the BETHE Program[1] P. TZEFERACOS, R. BETTI, J.R. DAVIES, F. GARCA-RUBIO, E.C. HANSEN, D. MICHTA, C. REN, A.C. REYES, W. SCULLIN, A.B. SEFKOW, J.G. SHAW, H. WEN, K.M. WOO, University of Rochester — Computer simulations are indispensable tools in the development of all areas of science and engineering. For any innovative fusion scheme, simulations are essential to help interpret data and to extrapolate from the first experiments to a prototype design. Here we present a project that assembles a theory/modeling Capability Team at the University of Rochester to provide, under the auspices of the DOE ARPA-E BETHE Program, simulation support for Concept Teams and independent theoretical analysis of the physics underlying leading Concepts. We discuss the suite of simulation codes-fluid, hybrid, and kinetic-we will use in this effort, and how they will be applied to engage with Concept Teams that focus on plasma-jet-driven magneto-inertial fusion, field-reversal configurations, and the staged Z-pinch. The codes central to this project are FLASH, TriForce, and OSIRIS, chosen because they are flexible, high-performance computing codes, capable of one-, two-, and three-dimensional simulations, and can be used by Concept Teams to sustainably continue their modeling efforts. The Capability Team also leverages OSHUN, a Fokker-Planck code to develop models of magnetized transport.

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