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(zoom) Significance of Simulation Capability Readiness for the Next Era of Cosmic Frontier Science

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Simulations have been and continue to play a crucial role in cosmic frontier surveys. As we explore further into uncharted science with increasingly precise measurements, the need for accurate theoretical predictions and cross-correlation measurements will only rise. The simulation challenges of the next decade involve not only enhancing physics modeling fidelity, but also the ability to fully utilize new generations of computing facilities for science. The ongoing efforts and successes of the Exascale Computing Project are a crucial example of the vital and demanding requirements of scientific codes to effectively use modern supercomputing hardware. Over time, we can anticipate that the difficulties to use machines beyond exascale will grow, thus emphasizing the need for supporting simulation development to address this issue.

Primary author: Dr FRONTIERE, Nicholas (Argonne National Laboratory)

Presenter: Dr FRONTIERE, Nicholas (Argonne National Laboratory)

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