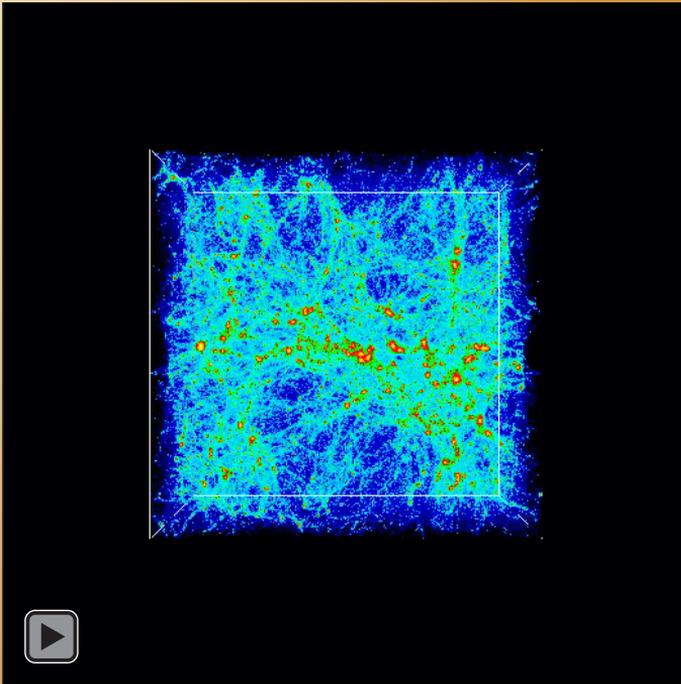


# Cosmological Simulations



The logarithmically scaled density field from a 1-billion particle N-body simulation in a computational volume approximately 400 million light years across. The N-body simulation was performed by our highly optimized Hashed Oct-Tree (HOT) code, sustaining over 50% of peak performance on 2048 cores.

Dark energy and dark matter are at the focus of an intense global effort to understand their existence. Next-generation observations promise new discoveries and an unprecedented jump in our knowledge of the Universe. Along with these observations, computer simulations enable discovery. The only way to accurately model the evolution of dark matter in the Universe is through the use of advanced algorithms on massively parallel computers. Our scientific aims are to use computer simulations to better understand the fundamental properties of the large-scale Universe.

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