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**Simulating Cosmic Reionization and Its Observable Consequences** PAUL SHAPIRO, Univ of Texas, Austin — I summarize recent progress in modelling the epoch of reionization by large- scale simulations of cosmic structure formation, radiative transfer and their interplay, which trace the ionization fronts that swept across the IGM, to predict observable signatures. Reionization by starlight from early galaxies affected their evolution, impacting reionization, itself, and imprinting the galaxies with a memory of reionization. Star formation suppression, e.g., may explain the observed underabundance of Local Group dwarfs relative to N-body predictions for Cold Dark Matter. I describe CoDa ("Cosmic Dawn"), the first fully-coupled radiation-hydrodynamical simulation of reionization and galaxy formation in the Local Universe, in a volume large enough to model reionization globally but with enough resolving power to follow all the atomic-cooling galactic halos in that volume. A 90 Mpc box was simulated from a constrained realization of primordial fluctuations, chosen to reproduce present-day features of the Local Group, including the Milky Way and M31, and the local universe beyond, including the Virgo cluster. The new RAMSES-CUDATON hybrid CPU-GPU code took 11 days to perform this simulation on the Titan supercomputer at Oak Ridge National Laboratory, with 4096-cubed N-body particles for the dark matter and 4096-cubed cells for the atomic gas and ionizing radiation.

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