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Direct Imaging of the Cosmic Web using the Condor Array Telescope, and hydrodynamic simulation predictions

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The filamentary pattern in which the Universe's matter concentrates, the cosmic web, is predicted by the Λ CDM cosmological model and contains the majority of the universe's matter. Detailed mapping of this interconnected structure of gaseous filaments, galaxies, quasars, dark matter, and voids, is central to a comprehensive understanding of the origin and evolution of our Universe. Deep, wide-field imaging has been carried out using the Condor Array Telescope in New Mexico and the data will soon be significantly improved using a new Condor Array in Chile, with first light in 2026. I will describe theoretical calculations based on hydrodynamical simulations to predict the cosmic web Lyman-alpha emission properties for comparison with real data and compare detection predictions with real data.

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