ASTROPHYSICS SEMINAR SERIES

Probing time-dependent dark energy with the flux power spectrum of the Lyman-alpha forest

Jared Coughlin
Graduate Student
Notre Dame Physics

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12:30 pm - Rm 184 NSH

This talk will summarize new calculations of the flux power spectrum of the Lyman-alpha forest in order to investigate the possible effects of time-dependent dark energy on this statistic. We use a parameterized version of the time-dependent dark energy equation of state and sample the associated parameters from the allowed observational values as determined by the Planck Satellite. Each parameter set is then used in a high-resolution, large-scale cosmological simulation run with a modified version of the publicly available SPH code GADGET-2. From each of these simulations we extract synthetic Lyman-alpha forest spectra and calculate the flux power spectrum at several different redshifts. Using the k-sample Anderson-Darling test in order to compare each of our synthetic power spectra to the power spectrum arising from a simulation employing the cosmological constant, we determine, however, that there is at best only marginally significant effects of dark energy on the flux power spectrum.

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