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Predictions for the Infall Pattern near Large-scale Cosmological Filaments[1] JESSE KELLEY-DERZON, LUCAS GRAHAM, MARY CRONE ODEKON, JAKE RABINOWITZ, ISAAC NGUNJE, EVAN HALSTEAD, Skidmore College, MIKE JONES, University of Arizona, APPSS TEAM TEAM, UNDERGRADUATE ALFALFA TEAM TEAM, ALFALFA TEAM TEAM — We present a method for estimating the amount of matter in large-scale (˜50 Mpc) filaments using the surrounding velocity infall pattern, based on 242 filaments in the Millennium simulation. We identify filaments using a minimal spanning tree to link large groups and clusters, and find the axis of each filament using a weighted principal component analysis. We improve our previous determination of a typical infall velocity profile by rescaling the profile for each filament by the distance where the infall speed reaches a maximum. We use the resulting average profile to determine a two-parameter piecewise function that can be used to estimate the maximum infall speed and the mass of the filament. These results will be used as part of the Arecibo Pisces-Perseus Supercluster filament. This work is supported by NSF grant AST-1637339.

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