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Detectability of cosmic dark flow in the type Ia supernova redshift-distance relation BENJAMIN ROSE, GRANT MATHEWS, PETER GARNAVICH, University of Notre Dame — We re-analyze the possibility of large scale bulk flow (or dark flow) with respect to the CMB background based upon the redshift-distance relation for Type Ia supernovae (SN Ia). We use a new analysis technique based upon the cosine dependence of the deviation from the Hubble flow on the sky. We apply this analysis to the Union2.1 supernova compilation and the new *SDSS*-II supernova survey. Results are consistent with previous bulk flow searches of $v_{df} = 325 \pm 54$ km s^{-1} in the direction of $(l, b) = (276 \pm 15, 35 \pm 13)^\circ$ for nearby, $z < 0.05$, and inconclusive for $z > 0.05$. Based upon the analysis of simulated data sets, we deduce that the current uncertainty at high redshifts arises mostly from the current error in the distance modulus. Thus, a bulk flow at large redshift is not detectable with current SN Ia data sets. We estimate a detection would require both significant sky coverage of SN Ia out to $z = 0.3$ and a greatly expanded data set of ≥ 4500 events might detect a bulk flow with a distance modulus error of 0.2 mag. This data set size should be achievable with the next generation of large surveys like *LSST*.

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