

## X59b Measurement of dipole component of astrophysical sources and estimation of our motion within the local large scale structure

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The CMB (cosmic microwave background) dipole anisotropy results from the Doppler effect caused by our peculiar velocity relative to the cosmic rest frame. The dipole estimated from the distribution of the respective source counts when aligned well with the cosmic dipole is likely a reconfirmation of the cosmological principle. As either of the dipoles are the resultant effects of the same kinematic motion, they are expected to agree in amplitude and direction in an isotropic, homogeneous large scale universe.

Here we use the AGN catalog selected using the Blecha et al.(2018) WISE color selection, derived from the AllWISE data release of the Wide-field Infrared Survey Explorer, to examine the inconsistency of the dipole anisotropy of the galaxy population and the kinematic dipole, as reported in prior independent studies. Various systematic corrections have been applied to ensure the uniformity required for an unbiased dipole measurement. The analysis uses HEALPix pixelization with the coverage map as a systematic template. We calculate the anisotropy using the least-squares estimator and observe that the resulting dipole amplitude exceeds the kinematic dipole expected from the CMB by a few times, and the inferred dipole direction is significantly displaced from that indicated by the CMB dipole direction.