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The multipole expansion of the local expansion rate

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The failure to converge on a consensus value of Hubble's constant triggered investigations into the reliability of geometric descriptions of the local spacetime that deviate from the standard cosmological metric. The question that arises is whether metrics with lower symmetries, while still simple, provide a reliable description of the data in the local patch of the universe where global uniformity is violated.

We address this problem, from a new angle, by determining the multipole structure of the redshift-distance relation in the local universe. Unexpected symmetries strong text appear whether the expansion field analysis is performed on galaxy or SNIa samples. Implications for the determination of the H_0 parameter will be discussed, and a proposal for a non-standard metric that faithfully describes the local data will be suggested.

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