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The Hubble constant in the Local Universe

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Measurements of the Hubble constant in the Local Universe are difficult due to the peculiar velocities. The presence in the Local Universe of under-dense and over-dense regions (e.g., hosting clusters of galaxies like Virgo, Coma, Hercules, etc.) determine the dynamical features of nearby galaxies opening a competition between the gravitational field attraction against the cosmic Hubble expansion. In fact, according to the Hubble-Lemaitre law, the expansion rate of the universe is low at small distances from us and in such a case peculiar velocities of nearby galaxies compete with the local Hubble flow, affecting our measurement of their radial recessional velocities. To perform a measurement of the Hubble constant we use the ALFALFA survey data, which mapped extra-galactic HI sources in the Local Universe. For our analyses we select a sub-sample of the ALFALFA catalog, sources with redshifts 0.01 - 0.02 because their distances and velocities were measured independently of the Hubble-Lemaitre law.

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