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Measuring Hubble's Constant with the Inverse Distance Ladder

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The precise value of Hubble's constant has become one of the most interesting cosmological tensions in recent years. Measurements of H_0 with Type Ia supernovae, in a series of papers by Reiss et al., use a distance ladder of parallax and Cepheid variable stars, and find a value of H_0 which is significantly higher than expected in a LCDM cosmology with Planck CMB parameters. In this work, we use an 'inverse distance ladder' method, using distance measurements from Baryon Acoustic Oscillations to calibrate the intrinsic magnitude of the SNe. We study 207 SNe from the Dark Energy Survey, at redshift 0.018 < z < 0.85, with existing measurements of 122 low redshift (z < 0.07) SNe. We find a value of H_0 = 67.8 +/- 1.3 km s-1 Mpc-1, which is consistent with the Planck + LCDM value. Our measurement makes minimal assumptions about the underlying cosmological model, and our analysis was blinded to reduce confirmation bias.

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