

# The measurement of the Hubble Constant: beyond the cosmic ladder

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A precisely determined Hubble's constant  $H_0$  would have an overarching effect on any feature of cosmological theory: the age of the Universe, the critical density of the Universe, or in the formation of cosmic structure. Producing a conclusive value for  $H_0$  is difficult as absolute distances on the cosmic scale are difficult to measure. Inhomogeneous gravitational acceleration generates motion which does not follow the simple expansion as described by Hubble's Law  $v = H_0 d$ . An uncertainty arises due to the discrepancy between the methods to connect local distances to the smooth large-scale Hubble flow (Fukugita et al. 1993).

Several approaches for cosmic distance measurement should therefore be made to reduce systematic errors. These measurements can form the "rungs" of the *cosmic distance ladder*, where large extragalactic distances ( $> 1000$  Mpc) are informed and calibrated by techniques which have smaller ranges. Astronomers may employ a variety of methods, therefore the ladder could be instead expressed as several pathways (Figure ).

### References

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