Title:	The Hi Mass Function of Star-forming Galaxies at z ∼ 0.35
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Abstract:	The neutral atomic hydrogen (HI) mass function (HIMF) describes the distribution of the HI content of galaxies at any epoch; its evolution provides an important probe of models of galaxy formation and evolution. Here, we report Giant Metrewave Radio Telescope HI 21 cm spectroscopy of blue star-forming galaxies at z ≈ 0.20–0.42 in the Extended Groth Strip, which has allowed us to determine the scaling relation between the average HI mass (MHI) and the absolute B-band magnitude (MB) of such galaxies at z ≈ 0.35, by stacking the HI 21 cm emission signals of galaxy subsamples in different MB ranges. We combine this MHI − MB scaling relation (with a scatter assumed to be equal to that in the local universe) with the known B-band luminosity function of star-forming galaxies at these redshifts to determine the HIMF at z ≈ 0.35. We show that the use of the correct scatter in the MHI − MB scaling relation is critical for an accurate estimate of the HIMF. We find that the HIMF has evolved significantly from z ≈ 0.35 to z ≈ 0, i.e., over the last 4 Gyr, especially at the high-mass end. High-mass galaxies, with MHI □ 1010 Me, are a factor of ≈3.4 less prevalent at z ≈ 0.35 than at z ≈ 0. Conversely, there are more low-mass galaxies, with MHI ≈ 109 Me, at z ≈ 0.35 than in the local universe. While our results may be affected by cosmic variance, we find that massive star-forming galaxies have acquired a significant amount of HI through merger events or accretion from the circumgalactic medium over the past 4 Gyr.
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