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Deep U-band MeerKAT observations of the COSMOS field

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MeerKAT and the upcoming SKA will drastically increase our horizon for direct measurements of neutral hydrogen (HI) in the Universe providing new insights on the baryonic content of galaxies across cosmic times. We recently acquired deep U-band MeerKAT observations of the COSMOS field. With these data and with the use of 21 cm stacking techniques, we will measure the HI mass of large samples of COSMOS MS galaxies in two redshift bins, z=0.4-0.8 and z=0.8-1.5. Our HI stack results in combination with the MIGHTEE-HI (L-band) survey will yield the first observational constraint on the fHI evolution from z=0 to z~1.5 in the COSMOS field, which will allow us to make a direct comparison with cosmological halo mass models. Very importantly, we will also get an independent measurement of fHI at z=0.8-1.5, obtained earlier with the GMRT, with another telescope and in another field. Moreover, the new MeerKAT observations will deliver an unprecedentedly deep continuum map at the 580-1015 MHz frequencies, which will lead to the detections of about 10k individual galaxies throughout a large range of redshifts.

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