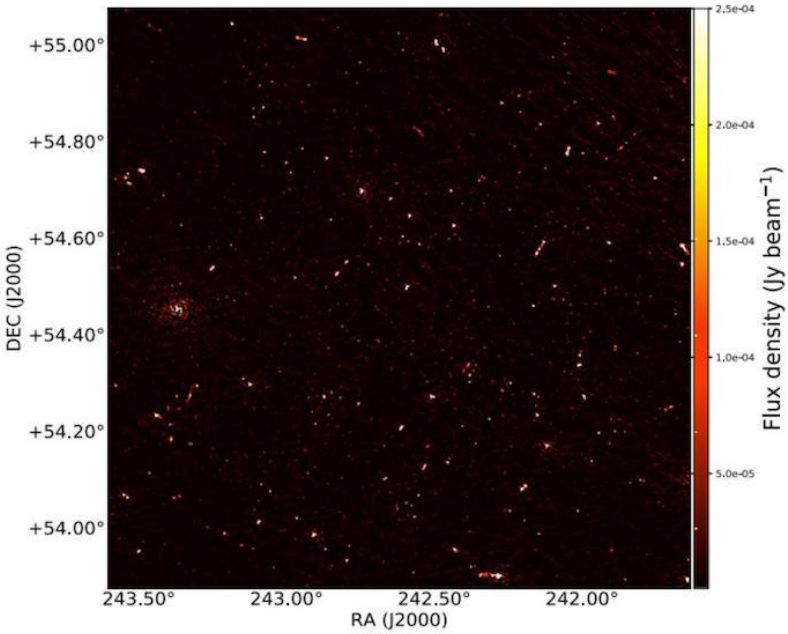
Abhirup Datta, Indian Institute of Technology Indore

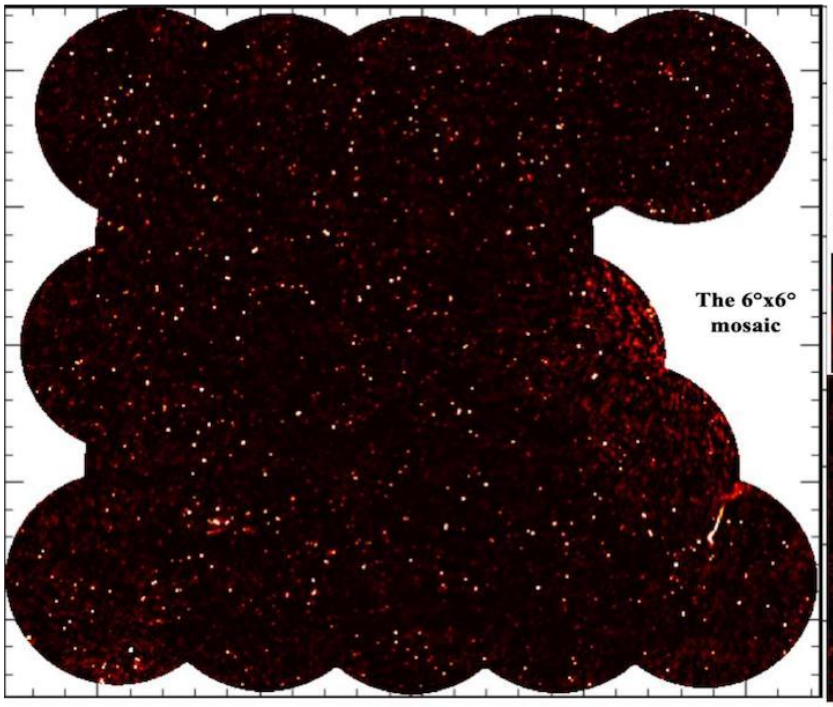


Deepest image in Band 3 uGMRT

Image of ELAIS N1 field at Band 3 with 15 uJy/beam.

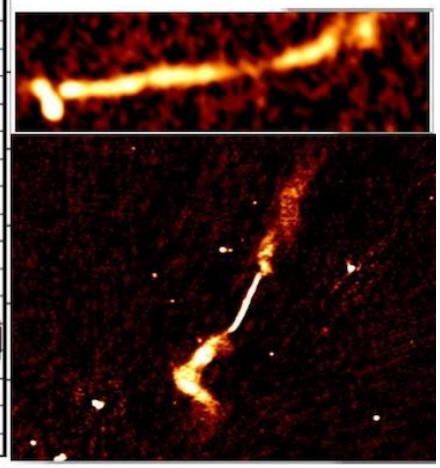
[Chakraborty, Roy, Datta et al. 2019, MNRAS, 490, 243-250]

Figure 2. The above uGMRT image is a zoomed-in total intensity image of ELIAS N1 at 400 MHz (bandwidth 200MHz). The central off-source noise is $\sim$ 15 μJy beam^{-1}. The image covers a central area of $\sim$ 1.2 deg^2. This illustrates that a large number of weak sources are detected due to the high signal-to-noise ratio achieved here.



Giant Radio Galaxies in the radio deep fields Of Lockman Hole

[Mazumder, Chakraborty, Datta et al. 2020, MNRAS, 495, 4071]



Upper limit on post-EoR HI signal from uGMRT

(Chakrabory, Datta et al. 2021, APJ Letters, 907:L7)

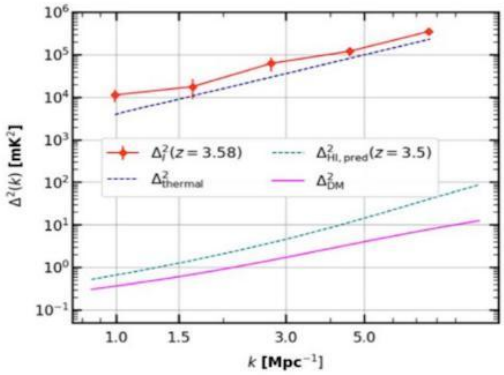


Figure 2. The spherically averaged dimensionless power spectrum, Δ_f^2, at $z = 3.58$ in red. The top dashed line in navy is the theoretical estimate of the thermal noise power. The bottom dashed line in teal is the theoretical prediction of HI power spectrum at $z = 3.5$ taken from Sarkar et al. (2016). The bottom magenta line is the dark matter (DM) power spectrum at $z = 3.58$ estimated using CAMB.

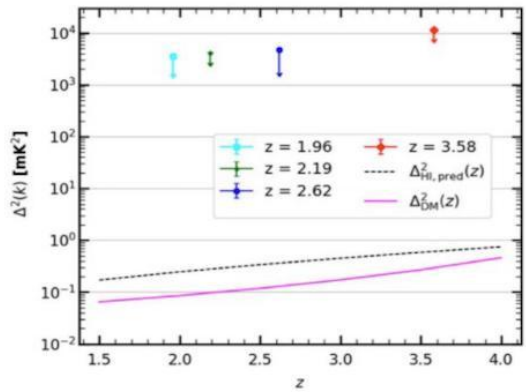
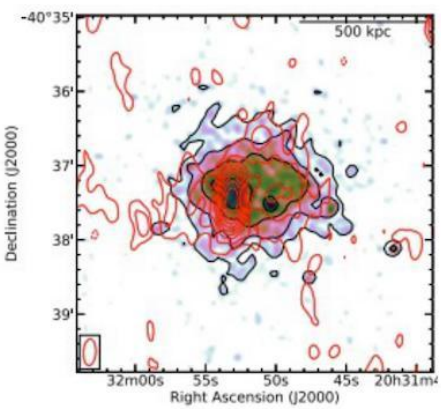
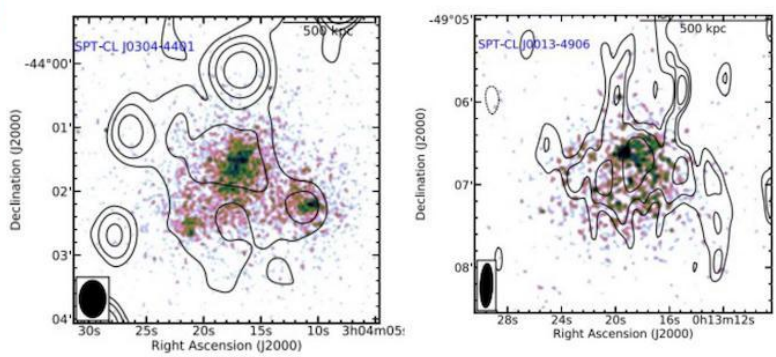


Figure 4. The lowest limit on a spherically averaged power spectrum for different redshifts at $k = 1.0$. The black dashed curve shows the theoretical prediction of the HI power spectrum as a function of z at $k = 1.0$ Mpc^{-1} (Sarkar et al. 2016). The bottom magenta curve is the dark matter power spectrum as a function of redshift.

Discovery of Diffuse Emission in Galaxy Clusters



Discovery of a steep spectrum radio halo in SPT-CL 2031-4037 (z ~0.34) with GMRT 325 MHz observations.
[Raja, Rahaman, Datta et al. 2020, MNRAS Letters, 493, L28]



Discovery of radio halo in SPT-CL J0013−4906 (z ~0.4) and SPT-CL J0304−4401 (z~0.39) with GMRT 325 MHz observations.
[Raja, Rahaman, Datta et al. 2021, MNRAS, 500, 2236]