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## Unveiling the HI auto-power spectrum with MeerKAT

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Neutral hydrogen (HI) intensity mapping is emerging as a revolutionary probe of the Large Scale Structure of the Universe and the MeerKLASS collaboration (MeerKAT Large Area Synoptic Survey) is currently running precursor analyses aiming to test the single-dish technique for mapping the cosmological 21cm signal using MeerKAT data. This signal, originating from the line emission at 1420MHz of HI permeating the cosmic web, is extremely weak compared to astrophysical contaminants, making foreground removal one of the major challenges to tackle.

I will present the analysis of 2021 MeerKAT L-band data, focusing on foreground cleaning strategies and, most notably, on the implementation of internal cross-correlations to mitigate noise and systematics. This technique enabled the first-ever detection of the cosmological HI signal at large scales that didn't require an external spectroscopic galaxy datasets for cross-detection. The results obtained show robustness against a variety of consistency tests performed and agreement with previous constraints coming from the cross-correlation of previous MeerKAT data and WiggleZ galaxies.

**Author:** BARBERI SQUAROTTI, Matilde (Università degli Studi di Milano)

**Orateur:** BARBERI SQUAROTTI, Matilde (Università degli Studi di Milano)

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