

# MeerKAT view of Hickson Compact Groups: data products and HI deficiency

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## Introduction

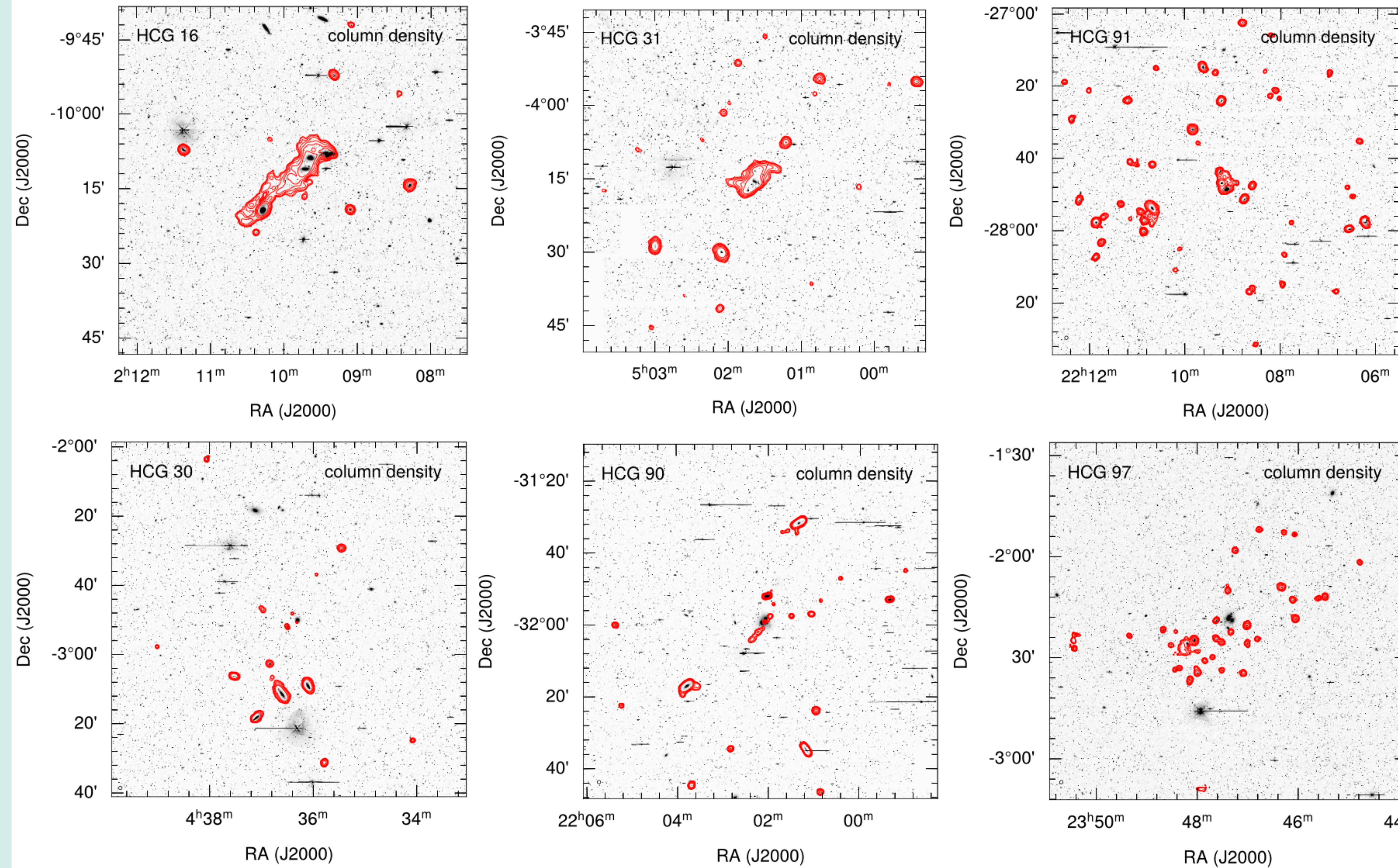
Hickson Compact Groups (HCGs) are dense collections of 4–10 galaxies characterized by frequent gravitational interactions among their members. They provide excellent laboratories to study the effect of environment on galaxies.

## Aims & Observations

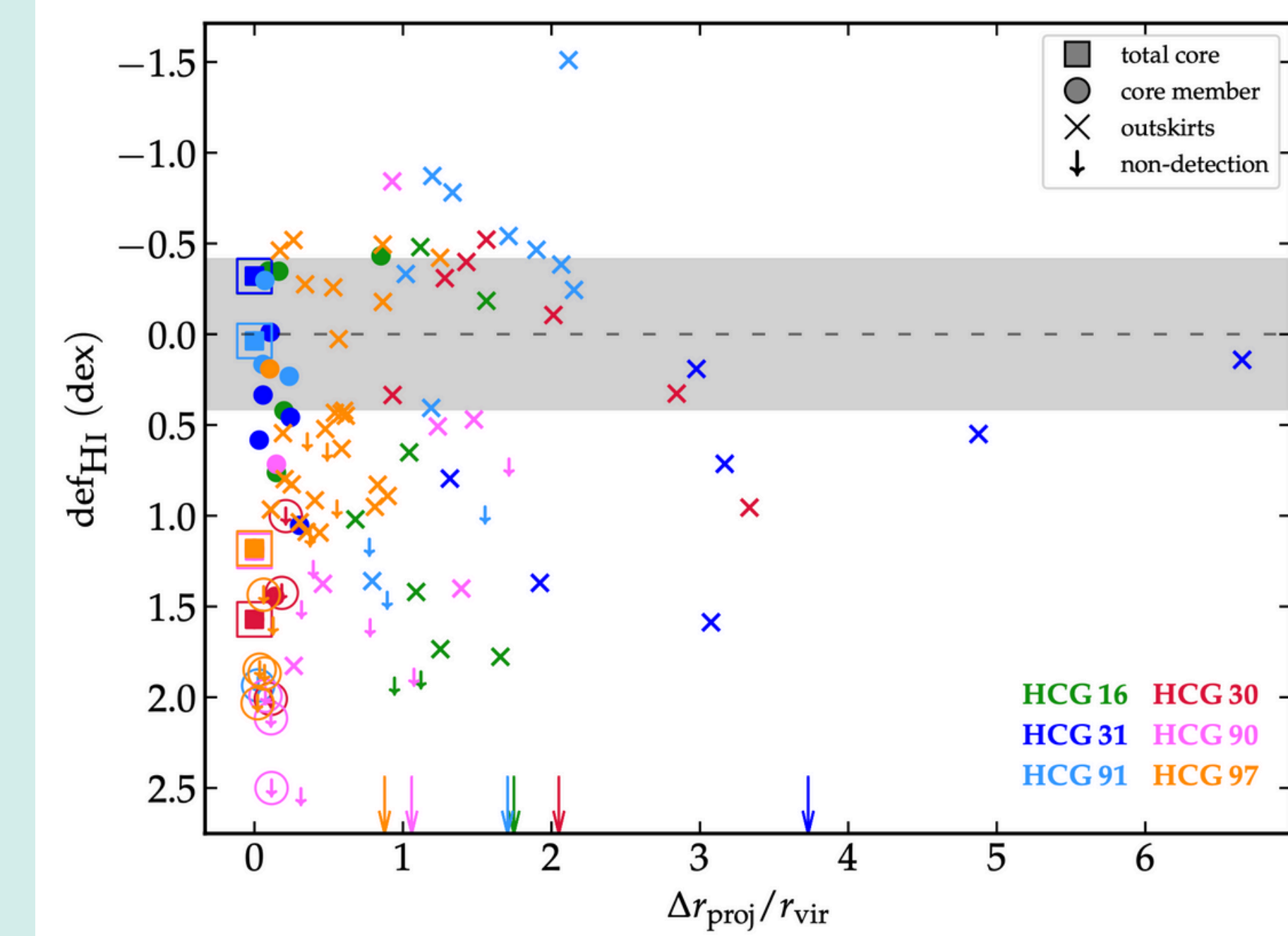
We aim to investigate how HCGs transition from phase 2, characterized by an abundance of neutral atomic gas (HI), to phase 3, where HI is nearly or completely absent. To do so, we observed three phase 2 and three phase 3 HCGs using MeerKAT.

## Results

MeerKAT revealed significantly more extended HI tidal structures in phase 2 groups compared to previous VLA data. In phase 3 groups, new high surface brightness features were identified, but no diffuse HI was detected. Additionally, many surrounding galaxies, primarily normal disk galaxies, were observed around the six HCGs.



HI column density maps overlaid on DECaLS DR10 R-band optical images. The lowest contour is about  $3.1 \times 10^{18} \text{ cm}^{-2}$ .



HI deficiency vs projected distance from the group center. The shaded region marks the range of normal HI content.

## Conclusion

Phase 2 galaxies generally exhibit normal HI content, while phase 3 galaxies show significant HI deficiency, particularly near the core. In both phases, HI deficiency decreases gradually with increasing distance from the group center.

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