

Contrast enhancement of radio depolarization canals by interferometric filtering

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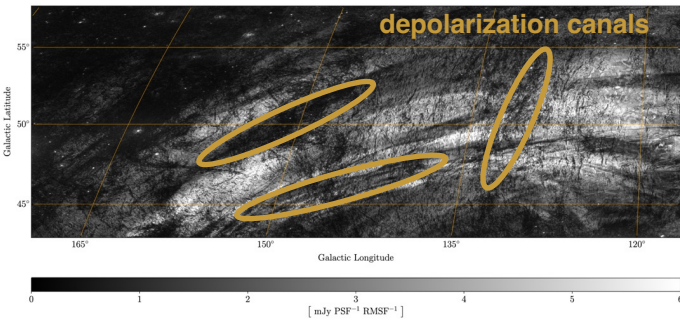
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Context

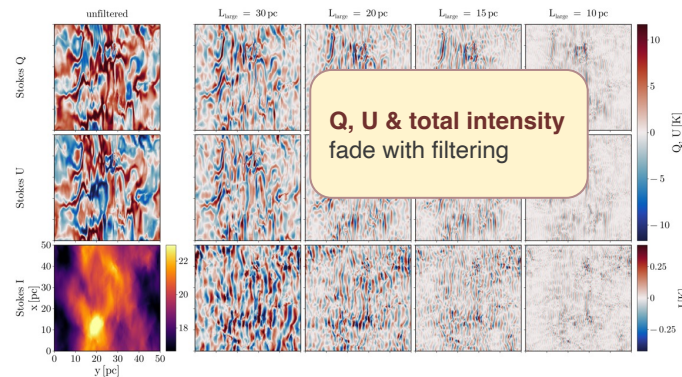
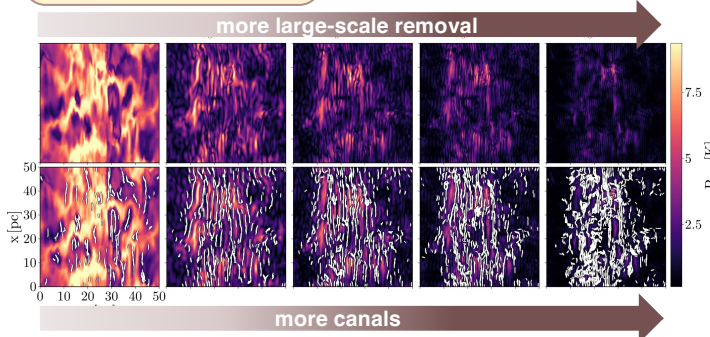
- Low-frequency radio-polarimetry reveals **filamentary polarized structures** and narrow **depolarization canals: elongated minima** in polarized intensity.



- We test whether **interferometric filtering**, rather than Faraday rotation alone, enhances contrast by **removing large scales**.

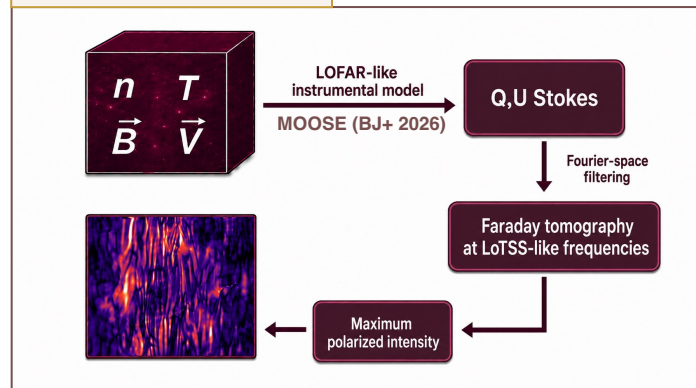
Results

of canals rises steadily as filtering increases

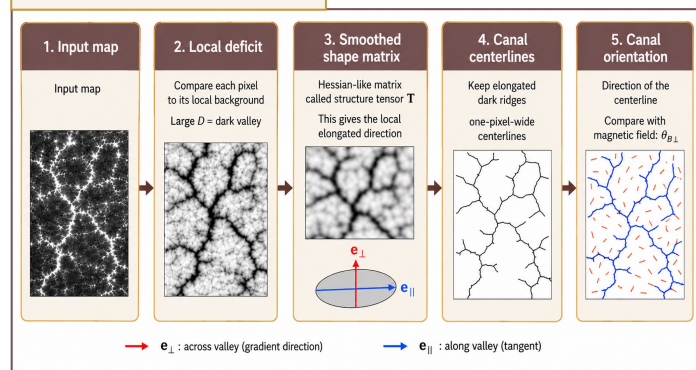


Methods

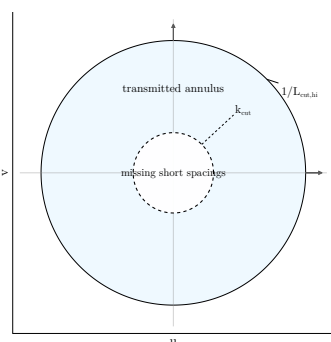
1 Synthetic observation pipeline



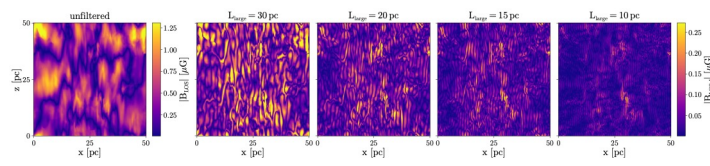
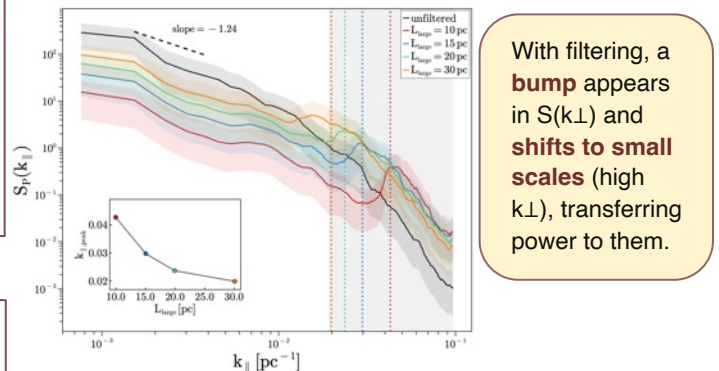
2 Canal extraction



Variable beam test



- Filtering was applied with **variable beam sizes to quantify effects on canal counts and widths**.



Filtered B shows similar structures
B + Faraday set the pattern; filtering boosts contrast.

Results takeaway

- Filtering the largest angular scales results in :
- Increasing canal contrast and producing more, narrower detections.
 - The B + Faraday pattern sets where canals appear; Interferometric filtering mainly boosts their visibility and shifts power toward smaller scales.

Key references

Erceg et al. 2022, 2024;
Jelić et al. 2015, 2018;
Haverkorn et al. 2003;
Burn 1966;

Bracco et al. 2022
BJ et al. 2026

Scan for MOOSE

