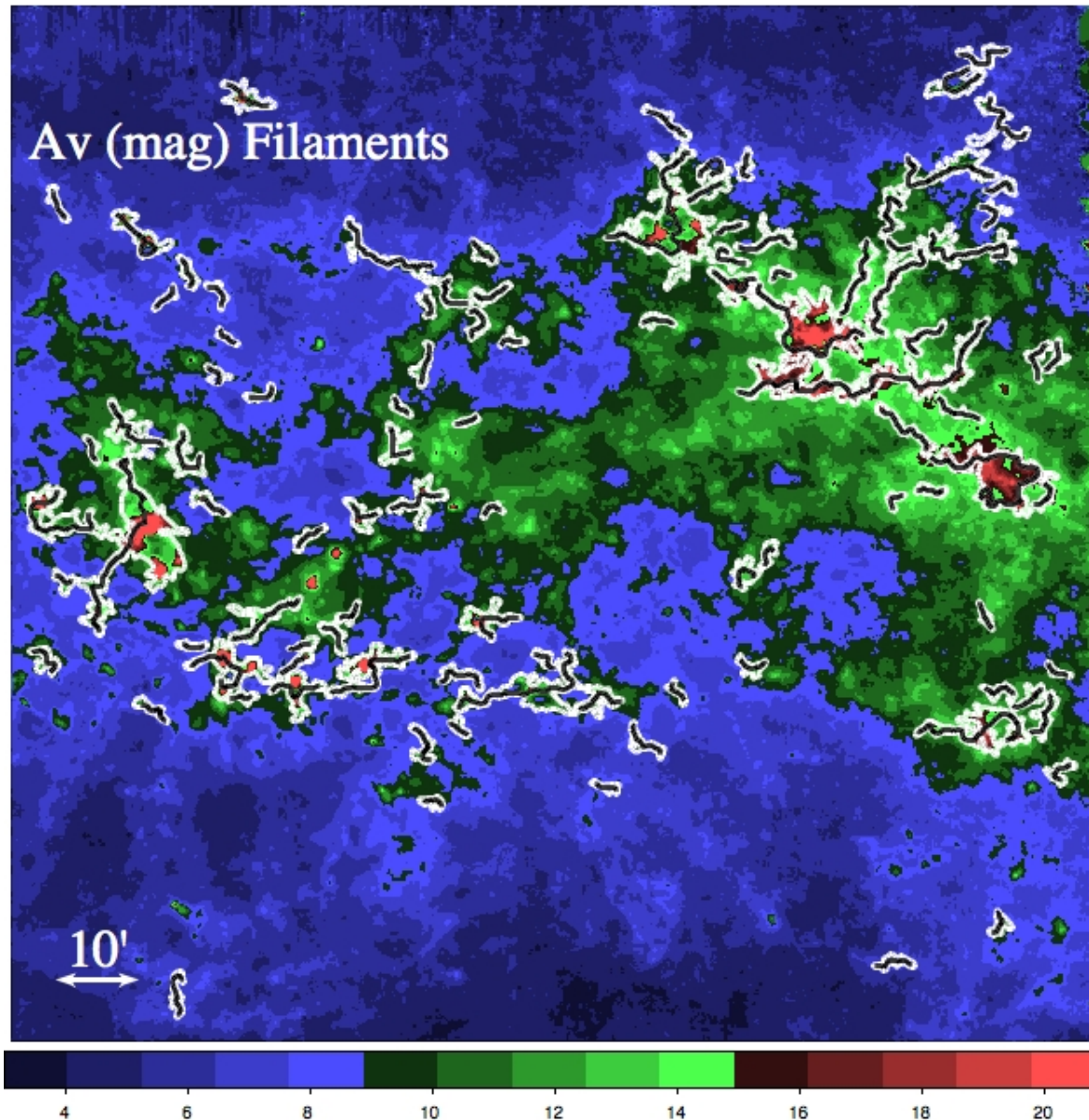


# Automatic Filament Extraction

(Schisano et al. in prep)



- Elongated cylindrical-like patterns are traced by the lowest eigenvalue ( $\lambda_1 \ll \lambda_2$ ) and the eigenvectors ( $A_1, A_2$ ) of the Hessian matrix computed in each pixel of a column density map.
- Determine a threshold on Hessian eigenvalues to identify the pixels belonging to the filament.
- morphological operators of erosion (Gonzales & Wood 2002) to estimate the points of the central "Spine".
- "Spine" points are connected using a Minimum Spanning Tree
- Determine cross-spine filament size in each spine point

Approach used to identify cosmological structures (Aragon-Calvo et al. 2007, Bond et al 2010)