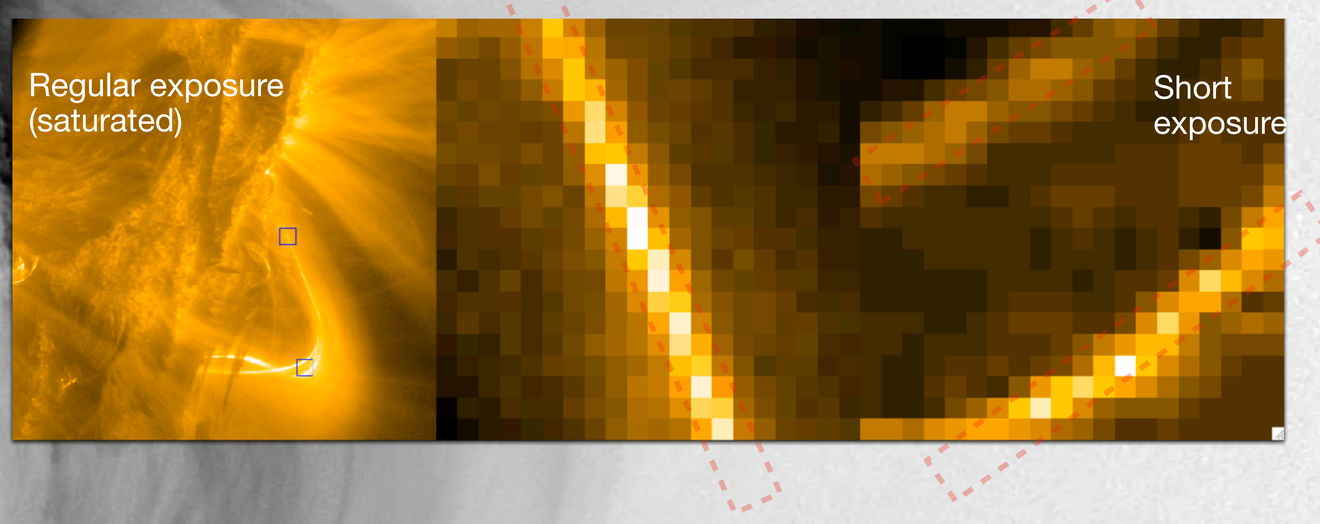
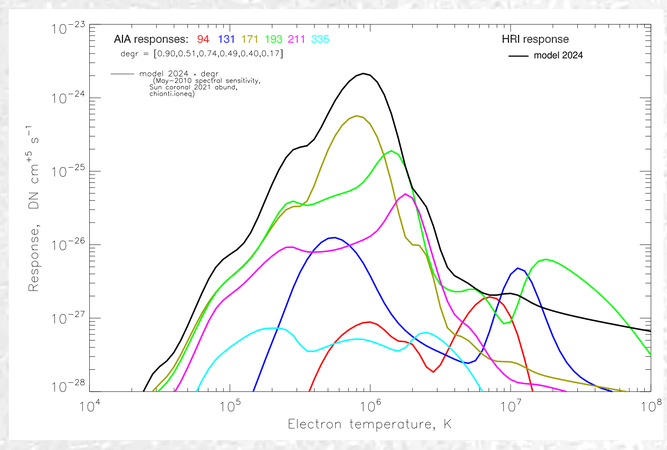
The thinnest ~~flare~~ loop strands ever observed in the corona *by Solar Orbiter/EUI.*

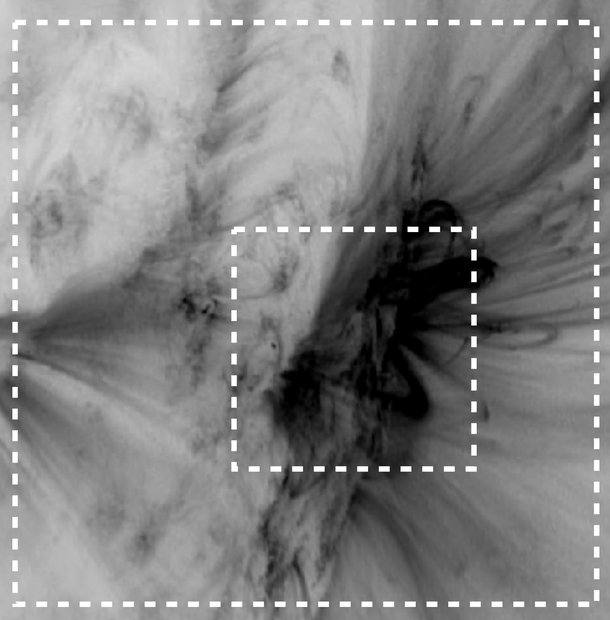
D. Berghmans, C, Kalugodu, S. Shestov, C. Verbeeck, E. Kraaikamp, K. Loumou, E. Dickson, ***Royal Observatory of Belgium.***

- Magnetic reconnection, which drives space weather events such as flares, progresses on small spatial scales in the solar corona. Here we explore the thinnest magnetic structures observed by EUI's HRIEUV telescope onboard Solar Orbiter during the perihelion at 0.293 au on 2024-04-04.
- HRIEUV has 0.495" pixels corresponding to 105 km on the Sun. Short (0.04 s) exposure, unsatured images reveal very bright post-flare strands of ~2 pix FWHM. The brightness of up to 6x10^4 DN/s can be explained by assuming cylindrical loops at the 1 MK peak of the HRIEUV response function with a density as high as > 3x10^10/cm^3.

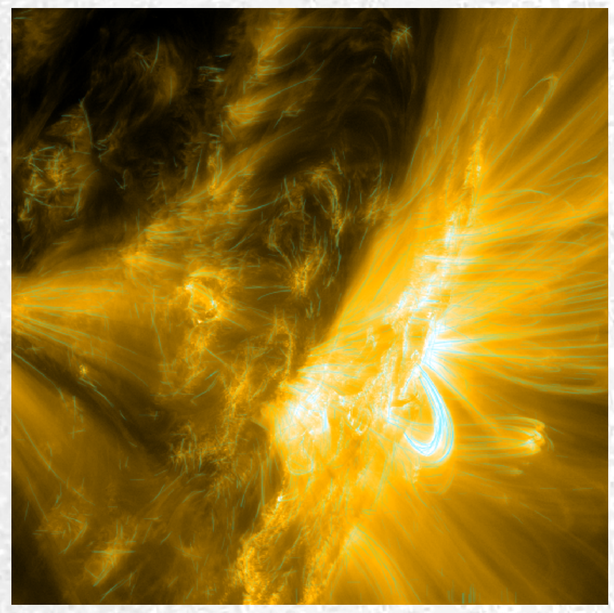
Shestov et al 2025





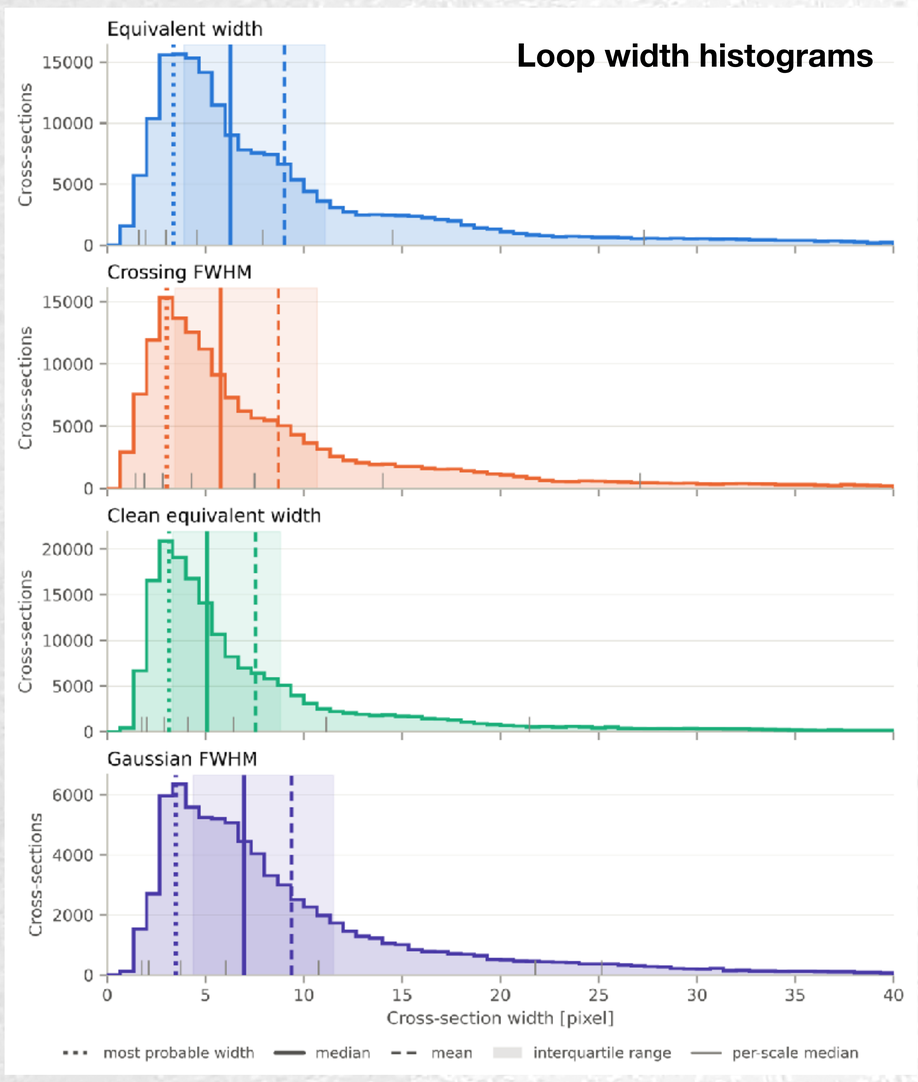


- Following Aschwanden & Peter (2017), we applied the OCCULT-2 loop tracing algorithm.
- Perpendicular cross-sections are taken at every point of the measurement axis, at the one-pixel arc-length spacing.
- 4 different methods are employed to estimate the loop widths on both regular and short exposure images.



- Irrespective of the method, we obtain a most probable width between 3 and 4 pixels (300-400 km) and a minimal width of 1-2 pixels (100-200 km).
- These results indicate that most loop widths appear resolved in HRIEUV.
- Among the unresolved loop widths, at or below 2 pixels, are the highly contrasted loops in short exposures such as post-flare loops.

These result indicate that yet thinner loops might hide below the resolution limit of current instrumentation. We have not hit the rock bottom yet.



david.berghmans@oma.be