

Calibrating LOFAR data for solar physics using a sun model

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Challenges in calibrating solar data

- (1) short duration, typically a few seconds;
- (2) high intensity, the flux exceeding 10^7 Jy.

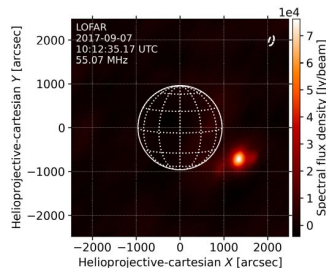


Figure 1. Solar flare observed by LOFAR (credit C. Vocks).

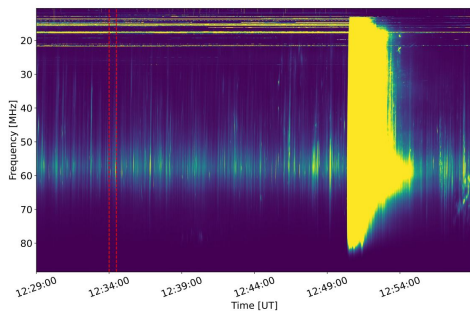


Figure 4. Radio spectrum of the observation. The red lines indicate the time duration used for the calibration, from 12:34:00 to 12:34:30 (credit: LOFAR-Solar catalogue).

Typical calibration routine for LOFAR solar observation

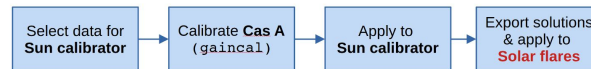


Diagram 1. Standard calibration routine of LOFAR solar data.

New calibration routine including Sun models

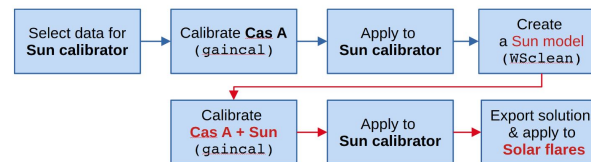
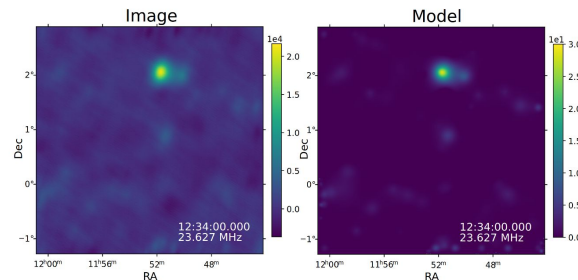


Diagram 2. New calibration routine of LOFAR solar data.



Figures 5. Images of the Sun calibrator (left) and its model (right).

Results
→Check out
the poster!