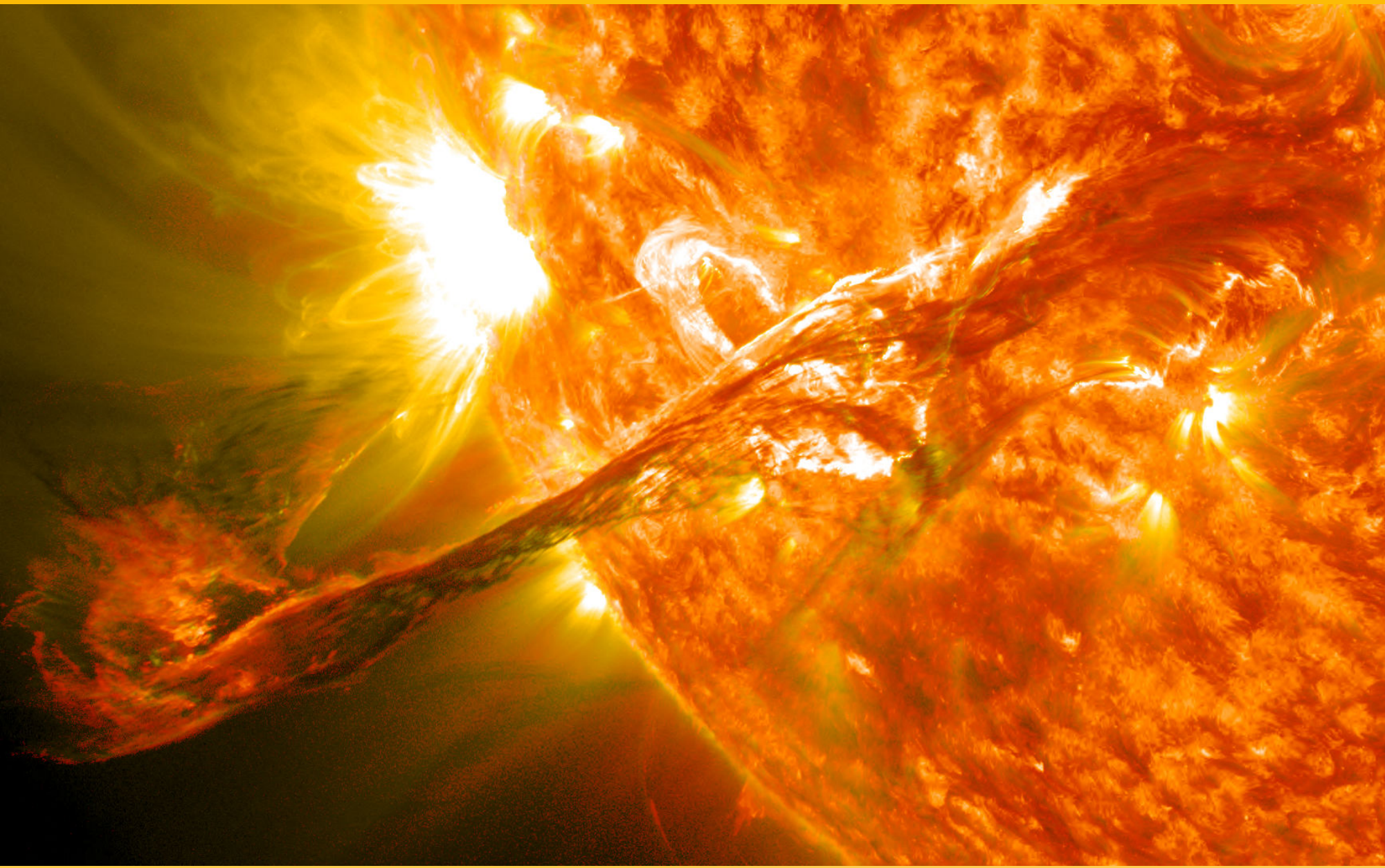
Automated detection, characterization, and tracking of filaments from SDO data

Éric Buchlin, Claude Mercier,
Jean-Baptiste Goujon, and Jean-Claude Vial

Institut d'astrophysique spatiale
CNRS and Université Paris Sud, Orsay

11th European Space Weather Week
Liège, 17 November 2014

Prominence/Filament



Why and how do we detect filaments in UV?

Filaments can be injected into interplanetary space during eruptions, eruptions can be associated to Coronal Mass Ejections:
major contributor to space weather.

Need to *detect filaments and eruptions* in near real-time.

FILEAS detection code:

- Use of space-based data for cadence and continuity:
  SDO/AIA 30.4 nm (image processing) and
  SDO/HMI (magnetic polarity inversion lines).
- Filament tracking.
- Database of results.

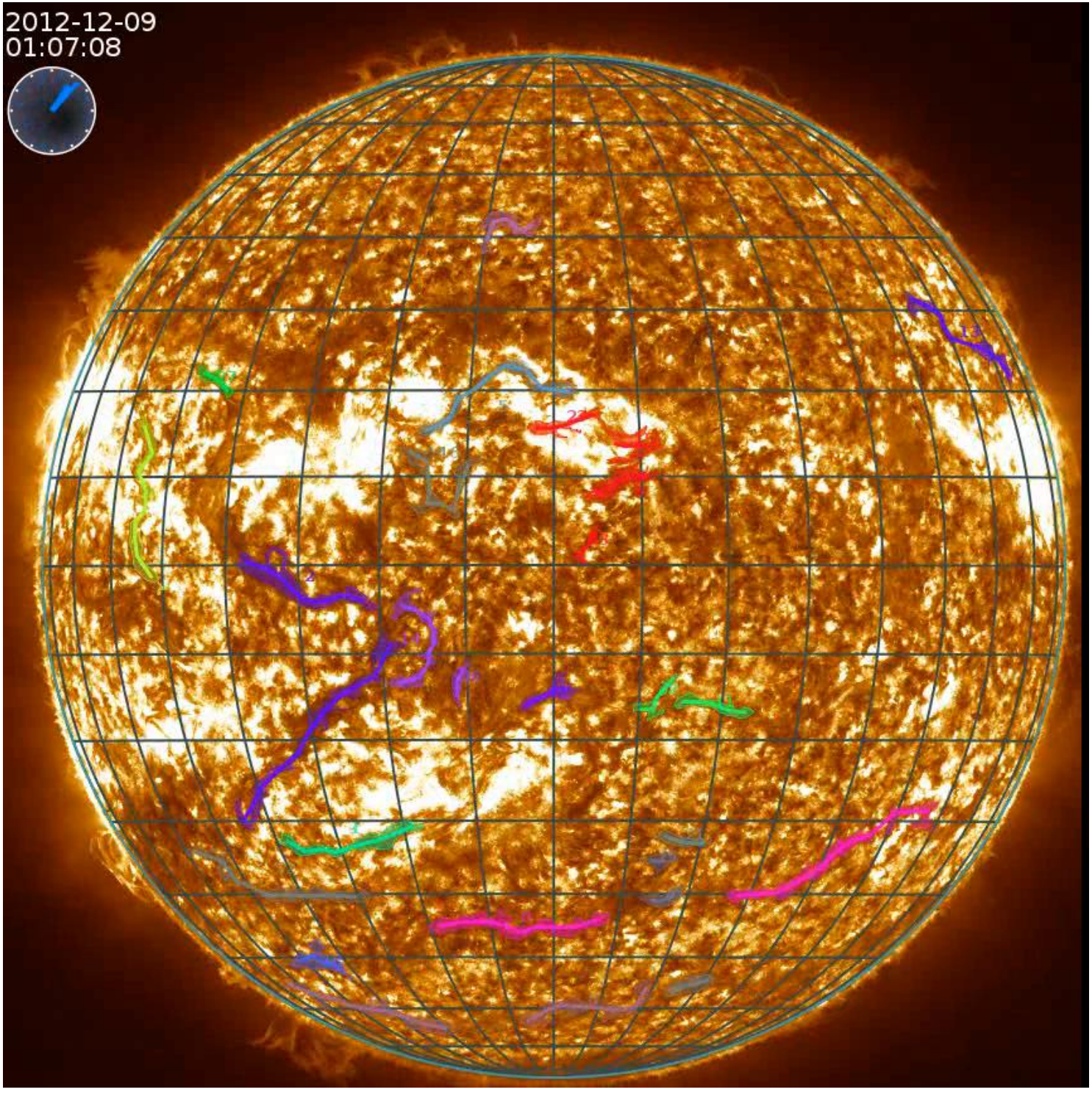
Why and how do we detect filaments in UV?

Filaments can be injected into interplanetary space during eruptions, eruptions can be associated to Coronal Mass Ejections:
major contributor to space weather.

Need to *detect filaments and eruptions* in near real-time.

FILEAS detection code:

- Use of space-based data for cadence and continuity:
  SDO/AIA 30.4 nm (image processing) and
  SDO/HMI (magnetic polarity inversion lines).
- Filament tracking.
- Database of results.


2012-12-09
01:07:08

Conclusion

- We have developed a code that *detects and tracks filaments* in He II 304 from SDO/AIA, using also SDO/HMI data.
- *Parameters of filaments* are computed and feed a *database* that can be used for complex queries.
- Outlook: systematic use of SDO data, detections of eruptions and activations.

Poster 27-e