



**Sophie Musset**

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Sophie Musset obtained her PhD in Astronomy and Astrophysics at Paris Observatory in 2016. Her thesis, “Acceleration and transport of energetic particles in the solar corona: from RHESSI data analysis to the preparation of the exploitation of the STIX experiment on Solar Orbiter”, was supervised by Dr. Nicole Vilmer. Since 2017, Dr. Musset is performing research as a postdoc at the University of Minnesota, with an emphasis on the X-ray signatures of accelerated electrons in the solar corona associated with coronal jets. She is also part of the FOXSI (Focusing Optics X-ray Solar Imager) sounding rocket team (PI Pr. Lindsay Glesener, University of Minnesota) and actively participated to the preparation and implementation of the third flight of the instrument which took place on September 7<sup>th</sup>, 2018. She was invited to present the FOXSI sounding rocket program on behalf of the FOXSI team to the 10<sup>th</sup> IRIS workshop in Bangalore, India, in November 2019.

## 10<sup>th</sup> IRIS workshop

November 4-8 2019, Bangalore, India

*Invited presentation:*

### **Investigating high energy processes in the solar atmosphere with the FOXSI sounding rocket** Sophie Musset & the FOXSI-3 team

#### **Abstract**

The Focusing Optics X-ray Solar Imager (FOXSI) is a sounding rocket experiment designed to demonstrate focusing imaging and spectroscopy of the solar hard X-ray emission, in order to study the fundamental processes of energy release in the solar corona. Previous solar-dedicated hard X-ray instruments have used indirect, Fourier-based imaging techniques with limited dynamic range and sensitivity. Due to recent technological advances, focusing optics for hard X-rays are now available and have been optimized and demonstrated for solar observations with the FOXSI sounding rocket experiment. This has made it possible to observe faint coronal sources of hard X-ray emission near sources of energy release. The FOXSI rockets flew three times in 2012, 2014 and 2018. During the last two flights, observations have been coordinated with the Interface Region Imaging Spectrograph (IRIS). In this presentation, we will give an overview of the FOXSI experiment and the various observations obtained during the flight, with a particular focus on the coordinated observations with IRIS and the science enabled by the combination of sensitive HXR imaging spectroscopy and UV high resolution spectroscopy and imaging.



The FOXSI-3 team and rocket



The FOXSI-3 rocket provided the first photon-counting images of the Sun in soft X-rays (<2.5 keV). This image is a mosaic of the observations obtained during the flight.

*“This invited talk was a great opportunity to present the FOXSI sounding rocket experiment and results to the IRIS community. Since it was my first attendance to an IRIS workshop, I was able to network with a different community and start new collaborations. This was also my first trip to Asia, and it was a great occasion to hear about research done in India and to meet colleagues from Asia in general. I would like to thank SPD for the travel award, and the organizers of the workshop for their additional travel support to attend this conference.”*