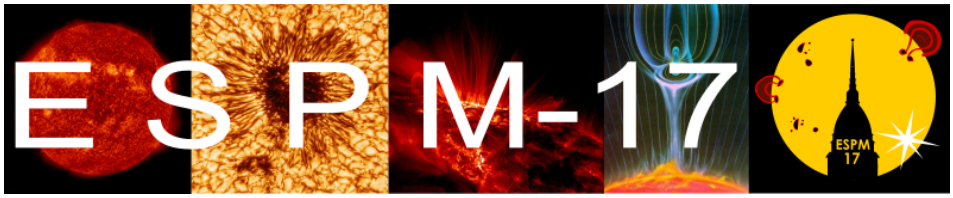

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Synergies between SOLAR-C and MUSE: A case study

SOLAR-C and MUSE are among the next generation solar missions, with launch dates in 2028 and 2027 respectively. Those mission will carry two complementary instruments providing each high resolution spectroscopy in the UV and EUV.

The EUV High-throughput Spectroscopic Telescope (EUVST) onboard SOLAR-C will obtain high temporal, spectral, and spatial resolution spectra of the Sun over a wide wavelength range, from 17 nm to 128 nm, thus providing seamless access to plasma temperatures from 0.01 to 20 MK. The instrument will also provide narrow-band context imaging at 280 nm.

MUSE, on the other hand, will implement a novel multislit approach in three selected wavelength bands, at 10.8, 17.1, and 28.4 nm. This revolutionary new design will allow obtaining spectra in isolated EUV lines over wide areas of the Sun at speeds that are up to two orders of magnitude higher than the classical single-slit approach.

The two missions, therefore, will be highly complementary. We present here a case study of synergistic observations between the two instruments. To this aim, we compute synthetic EUVST and MUSE spectra obtained from a MHD simulation of nanojets, where magnetic reconnection is triggered and leads to simultaneous heating and motion of plasma, making this numerical experiment a perfect showcase for the capabilities of either instruments. We discuss these synthetic observations and a concept of coordinated EUVST and MUSE observations optimized towards the science goal of studying the physics of nanojets.

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