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3D reconstruction of a flare related solar coronal jet observed by Solar Orbiter STIX and EUV, STEREO and SDO

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After the first discoveries of a different variety of transient phenomena in the solar corona during the 1970s, many recent observations reported that solar coronal jets, which represent an essential manifestation of ubiquitous solar transients, may contribute to the heating of the solar corona and the acceleration of the solar winds. However, the same observations show that jets can be morphologically complex phenomena to study. In this regard, the reconstruction of solar coronal jets in 3D using near-simultaneous observations at different viewpoints allows showing the structure of such events unambiguously.

In the present work, we present the 3D reconstruction of the solar coronal jet that occurred on 2021 February 18 using EUV observations of the Extreme Ultraviolet Imager (EUI) onboard Solar Orbiter (SoLO), the Atmospheric Imaging Assembly (AIA) of the Solar Dynamic Observatory (SDO) and the Extreme Ultraviolet Imager (EUVI) onboard STEREO A. Associated with the jet, a GOES A8 class microflare is detected by STIX (Spectrometer/Telescope for Imaging X-rays), the Hard X-ray telescope onboard Solar Orbiter. This unique set of observations provided by three broadly distributed positions in the heliosphere allowed us to apply triangulation techniques, track the evolution of the jet, calculate its kinematics and investigate the flare energy content.

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