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SOL2022-03-30 X1.4 GOES Class Flare: Localising the source of quasi periodic pulsations in the Hard X-ray and microwave emissions with STIX onboard Solar Orbiter and EOVSA.

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In this work the analysis of the SOL2022-03-30 X1.4 GOES class flare is presented. This flare was observed by Solar Orbiter during perihelion as well as from Earth based observatories including SDO's AIA and the Extended Owens Valley Solar Array (EOVSA). It displays well correlated fast time variation in the HXR and microwave wavelengths of emission with time dependent lags. The mechanism behind such observed puslations is not yet fully understood and is important for gaining an understanding of particle acceleration and energy release in solar flares. In this flare, the oscillatory behaviour grows in time and can be split into three phases with QPP periods ~7s, ~14s and ~35s. New capabilities from Solar Orbiter's Spectrometer Telescope for Imaging X-rays (STIX) allows for the localisation of individual bursts on short timescales which enables us to determine the spatial morphology of the HXR emission and its evolution in time. The HXR source locations are compared with the microwave sources observed by EOVSA and the ribbon structure determined from AIA 1600Å and 1700Å. The QPP source locations are found to change significantly in time. Furthermore, the electron spectral index is anti-correlated with the observed HXR emission, obeying the soft-hard-soft relation. When combined, these observations point towards a mechanism for QPP generation which involves quasi-periodic energy release and injection of electrons into the flaring loop. However, several open questions remain about how these QPPs are generated.