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Comparison of QPPs characteristics in Lyman-alpha and SXR solar measurements

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Quasi-periodic pulsations (QPPs) refer to nearly-periodic oscillations that are often observed in irradiance time series during solar flares and have also been reported in several stellar flares. In the last years, several statistical studies based on Soft X-ray measurements have reached the conclusion that QPPs are present in most solar flares of class M and above.

However, QPPs sometimes exhibit different properties. In particular, QPPs with periods of the order of 20s have been detected during the impulsive phase of most flares, but longer periods are also sometimes present and tend to persist in the decaying phase of flares. Also, for some events, the period has been reported to increase as the flare evolves, which has been correlated with the evolution of the ribbon separation. But again, this behavior does not seem to happen systematically.

All this could point to the coexistence of QPPs with different origin mechanism.

Recently, QPPs were also detected in the Lyman-alpha observations of solar flares. As most of the Lyman-alpha flare emission is likely produced at the footpoints of the flaring loops, when the beam of electrons accelerated during the magnetic reconnection at the origin of the flare reaches the chromosphere, the Lyman-alpha observations are expected to behave similarly to non-thermal emission, contrarily to SXR observations.

In this poster, we compare the characteristics of QPPs detected in Lyman-alpha observations by PROBA2/LYRA, GOES-15/EUVS-E, etc., to those in the SXR with the aim of getting additional information to help differentiating between the mechanisms at their origin.

Student poster?

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