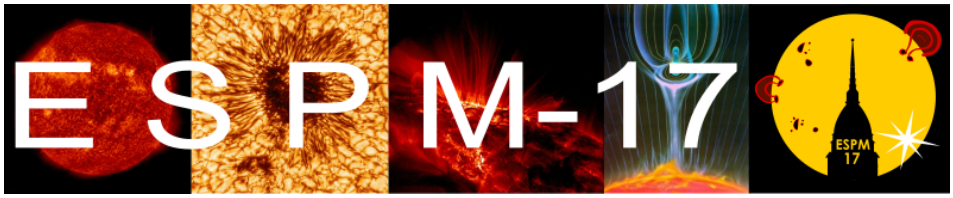

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Correlation approach to nanoflare heating diagnostics

The solar corona is hypothesized to be heated via small-scale random impulsive events, i.e., nanoflares. Recent DEM analysis results indicate that nanoflare generation frequency may be noticeably higher than the characteristic cooling rate of coronal plasma. Hence, individual nanoflare lightcurves are hardly distinguishable from the seemingly uniform background, complicating standard event-based statistical methods to study these phenomena. We believe that process-based techniques may be more effective. We propose a new model-based correlation approach to probe the main parameters of nanoflares, such as their frequency and duration. The latter is directly associated with the energy release time crucial for physical interpretation. We present and discuss the results of applying the algorithm to a range of synthetic data and observations provided by the latest space-bourne solar observatories.

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