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Statistical analysis of irradiance time series in preparation of LYRA, the UV radiometer on board the ESA Proba-2 mission

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LYRA is the solar UV radiometer that will embark in 2006 aboard Proba–2, a technologically oriented ESA micro-mission. LYRA will monitor the solar irradiance in 4 UV passbands. The channels have been chosen for their relevance to Solar Physics, Aeronomy, and Space Weather: 1/ 115–125 nm (Lyman-α), 2/ the 200–220 nm Herzberg continuum range, 3/ Aluminium filter channel (17–30 nm), and 4/ Zirconium filter channel (1–20 nm). LYRA will benefit from pioneering diamond detectors.

After having introduced the LYRA instrument, we present the preparation of the statistical analysis of its time series. These are modelled as the sum of a solar signal perturbed by Poisson noise as well as read-out noise of the flight model detectors. Flares appear as peaks in the time domain. We provide a multiscale method for extracting these bursts from the slowly varying baseline. One aim is to study the distribution of their amplitude and duration. We apply this approach on XUV time series from the past GOES mission.