M26a Multi-wavelength observations of solar flares as basement of diagnostics of mechanism of quasi-periodic pulsations

S. Masuda (Nagoya University), E. G. Kupriyanova (Pulkovo Observatory), L. K. Kashapova (Institute of Solar-Terrestrial Physics, Russia), H. A. S. Reid (University of Glasgow), Z. Xu (Yunnan Observatory), I. N. Myagkova (Moscow State University)

Quasi-periodic pulsations (QPPs) are frequently observed feature of significant number of solar flares. The most discussed explanations of QPPs are MHD waves and periodic reconnection. Appropriate objects for testing the different models are the flares with the QPPs that are pronounced simultaneously in the several bands through the electromagnetic spectrum. Analysis of the parameters of the QPPs in the different wavelengths (and, therefore, at the different heights in the solar atmosphere) allows to narrow class of mechanisms responsible for the QPPs. We use original combination of the standard methods (de-trending, correlation, Fourier, and wavelet) to examine the periods, phases, and amplitudes of QPPs, and relationships between them in different wave ranges. We tested our method on two flares observed in X-ray, microwave, radio wave, and Hα ranges. We used the observations of NoRH, NoRP (Nobeyama, Japan) and SSRS (Badary, Russia) in the GHz range, RSTN (Lermonth, Australia) and AMATERAS (Japan) in MHz range, RHESSI, FERMI, KONUS/WIND, KORONAS-F in hard X-rays, and NVST (Yunnan, China) for Hα. The periodic variations with the time scales 50 s and 150 s, which are individual for each flare, are found at most of the wave bands. We interpret the results as quasi-periodic injections of non-thermal electrons, produced by magnetic reconnection.