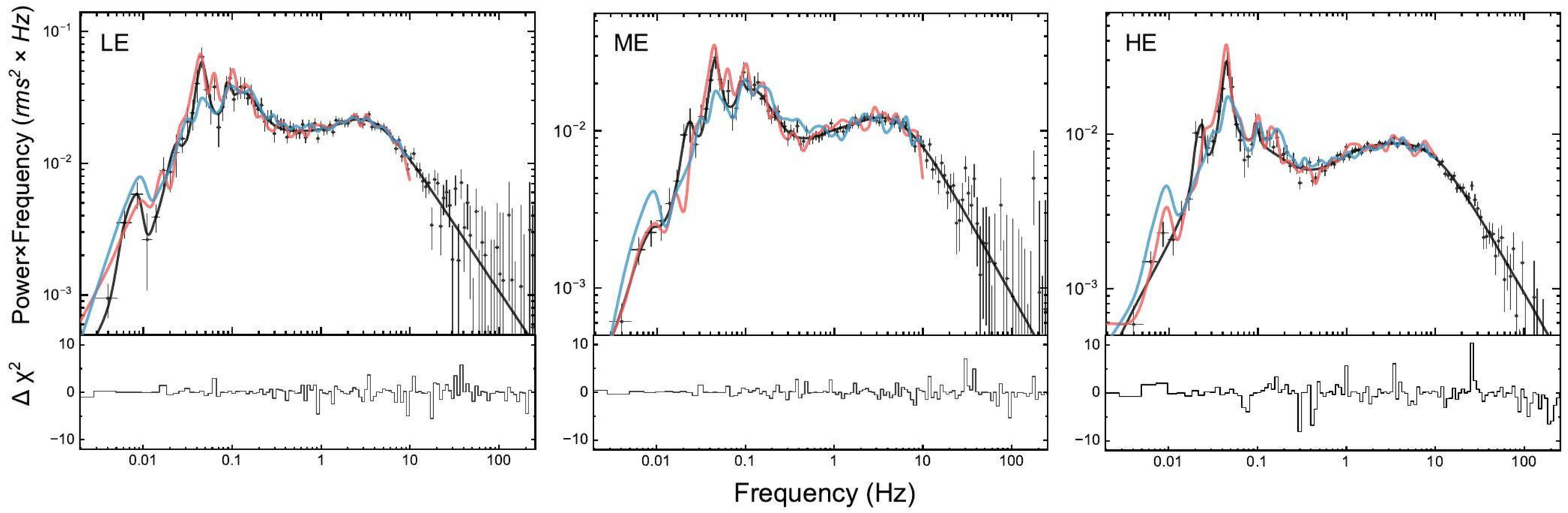

Figure 1. Upper: PDSs of LE, ME and HE light curves and faked light curves. The PDS of the original X-ray light curve is shown as black dots and the best-fitting model is shown as black solid line. The PDSs of identified flares (occupy ~ 40% of the entire exposure) is shown in red, and the PDS of non-flare intervals is shown in blue (for clarity, the uncertainties and the PDS above 10Hz are not plotted). By comparing the PDSs corresponding to the flare and non-flare intervals, we show that the power of the LFQPO is well accounted for by those identified flares. Lower: The contribution to the chi-square of each bin.

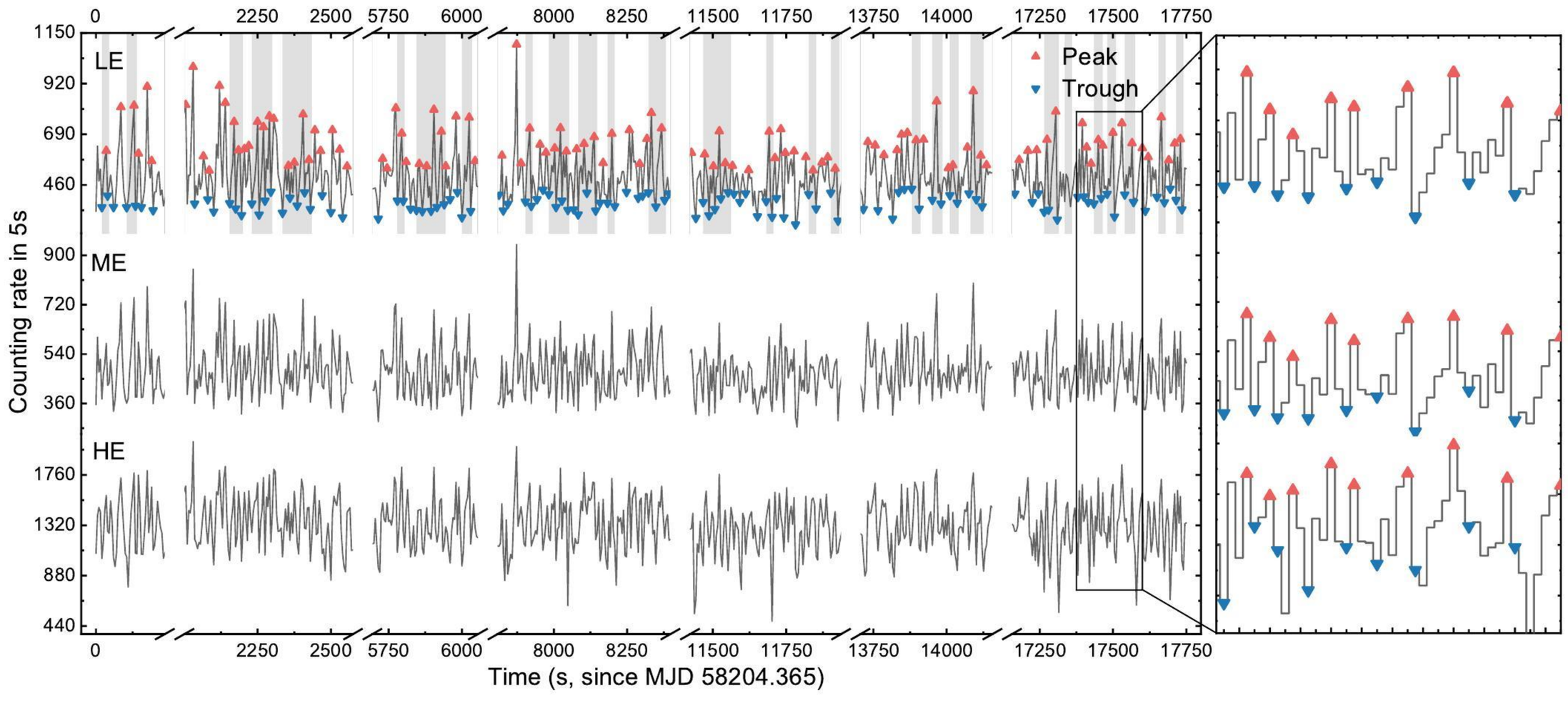

Figure 2. The background-subtracted light curves obtained in the observation `P011466100601` with a time resolution of 5 seconds. LE, ME and HE light curves are shown in the left panel from top to bottom, respectively. The triangle markers in the LE light curves indicate peak (red) and trough (blue) intervals we identified for the LFQPOs, respectively. **The shaded region in LE light curve indicates the interval of identified flares, the PDS of which shows that the QPO mostly account for those identified flares (see Figure 1).** The right panel is a zoom-in on a segment of the light curve.

To check whether the peaks and troughs of the selected flares are consistent with the QPO waveform, we produced a power spectrum of a faked light curve consisting of these selected flares. The interval between two neighbor trough is identified as a full flare, which corresponds to the QPO waveform with the time interval less than or equal 30 s. These identified flares covered ~ 40% of the entire light curve exposure (see the shaded region of Figure 2). We then generate two fake light curves based on the identified flare intervals. One is that the count rates during the flare intervals are retained, while the count rates during the non-flare intervals are replaced by the average count rate specific to each interval. The other is that the count rates during the flare intervals are replaced by their corresponding average count rate, while non-flare intervals are retained. The PDSs of the above fake light curves are shown in red and blue solid lines in Figure 1. It is obvious that the power spectra of the faked light curve of flare intervals show strong LFQPO. The power at the QPO frequency of 0.044 Hz in the faked PDS of flare intervals is larger than that of the non-flare intervals by a factor of 2.2 for the LE band, 2.0 for the ME band, and 2.0 for the HE band, respectively. At the same time, the band-limited noise components, e.g., the peaked noise in 1–10 Hz, are consistent with the same between that of the flare intervals and that of the non-flare intervals. The observed power of the LFQPO, especially that of the fundamental QPO peak, is mostly accounted for by those identified flares, demonstrating that the peak phase and