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A statistical study on the occurrence of discrete frequencies in the high velocity solar wind and in the magnetosphere

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The possible occurrence of oscillations at discrete frequencies in the solar wind and their possible correspondence with magnetospheric field oscillations represent an interesting aspect of the solar wind/magnetopheric research. We analyze a large set of high velocity streams following interplanetary shocks in order to ascertain the possible occurrence of preferential sets of discrete frequencies in the oscillations of the solar wind pressure in such structures. We evaluate, for each event, the power spectrum of the dynamic pressure by means of two methods (Welch and multitaper windowing) and accept the common spectral peaks that also pass a harmonic F-test at the 95% confidence level. We compare these frequencies with those detected at geosynchronous orbit in the magnetospheric field components soon after the manifestation of the corresponding Sudden Impulses.