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Power spectra in the sheath of shock-driven ICMEs

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ICMEs (Interplanetary Coronal Mass Ejections) are among the most geoeffective solar events and it is recognized that their sheaths could play an important role in the development of geoeffectivity. However, the interaction of turbulent sheaths with the planetary environments remains poorly understood. In this work, we focus on the turbulent sheath of ICMEs. We investigate their characteristics downstream of a shock and relative to the pristine solar wind. We select a list of single ICMEs events with a well-identified sheath preceding a magnetic cloud. Using data from ACE and Wind satellites, we compute the power spectrum of the magnetic field and of the dynamic pressure as a function of the frequency. These spectra evolve across the sheath from the shock to the magnetic cloud. We discuss the distribution of magnetic power versus frequency and distance inside the sheath. We examine the role of ICME's characteristics such as its magnetic field, velocity or density in power spectra.