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Identification of periodicities in solar wind parameters using empirical mode decomposition and Lomb S periodogram

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Sun shows short and long term periodicity in various kinds of solar phenomena. 11 year cycle is very common in many solar activity parameters, 22 year cycle in magnetic polarity reversal and also slowly varying component of solar radio emission shows periodicity of 27 days. Studies of periodicities in these parameters provide information about physical state of the sun i.e. it is quiet or disturbed. Apart from that study of periodic behavior of sun helps us to understand the various mechanisms involved in the different processes happening inside the sun. In the present study we apply empirical mode decomposition and Lomb S periodogram method for the identification of periodicities in solar wind parameters. These parameters show short periodicity of nearly 13.5 days as well as days. It provides very important information regarding the solar dynamics related to the development of dipole tilt. Keywords: EMD, Lomb S periodogram, periodicity, solar wind parameters

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