ODYN - Open-source software analysis tool to investigate space plasma turbulence and nonlinear DYNamics

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We advertise a versatile modularized software product – ODYN – that wraps a comprehensive set of advanced analysis methods meant to facilitate the study of turbulence, nonlinear dynamics and intermittency in space plasmas. Python programming language is used for the algorithmic implementation of models and methods devised to understand fundamental phenomena of space plasma physics e.g. computation of power spectral densities (PSD), probability distribution functions (PDF), structure functions (SF), Rank-Ordered Multifractal Analysis (ROMA) spectra, mutual information (MI), to name a few. Key features of our software relate to the fact that ODYN is open-source and freely available to any user interested in turbulence and nonlinear dynamics analysis and will provide the option to perform automatic analysis on large collections of selected space measurements. A datafile template that is compatible with ODYN will be provided for user-defined input data files that can be also useful to analyze virtual measurements produced through simulations. For users without programming skills a user-friendly worksheet will be provided that will permit customization of key parameters of the proposed analysis methods.