Intermittent structures in solar wind turbulence from MHD to sub-ion scales at 0.17 AU from the Sun

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We study solar wind magnetic turbulence with Parker Solar Probe during its first perihelion (at 0.17 AU), from MHD ($\sim 10^6$ km) to kinetic plasma scales (~ 1 km). Using Morlet wavelet decomposition, we detect intermittent coherent structures, which appear to cover all observed scales. Detailed analysis within different scale ranges shows that at the same time, events at MHD, ion and sub-ion scales coexist. However, their topology seems to change from planar structures at large scales to vortex filaments at the end of the MHD inertial range and at kinetic scales. This is observed for both, compressible and Alfvénic events. The number of structures N increases with wavenumber k, however, the filling factor decreases from $\sim 8\%$ to $\sim 2\%$ with k. We underline that intermittent events do exist at kinetic scales, that is at odds with what is commonly accepted.