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Solar wind obervations of electric and magnetic field spectra beyond the MHD inertial range JOHN J. PODESTA, Space Science Institute — Advances in spacecraft instrumentation now permit accurate measurements of electric and magnetic fields to be performed in the solar wind at scales less than or equal to the thermal proton gyro-radius ρ_i and the proton inertial length d_i. In the solar wind the proton beta is on the order of unity and, therefore, $\rho_i \sim d_i$. Recent results show that in the regime of kinetic scales $k\rho_i < 1$ wavenumber spectra of magnetic field fluctuations and electron density fluctuations both exhibit power laws with the same spectral slope ~ -2.7 or -2.8, consistent with predictions for kinetic Alfvén wave (KAW) turbulence. This assumes that the fluctuations are "frozen into the flow," also known as Taylor's hypothesis, an assumption believed to be valid for KAW turbulence. Here, I present new electric and magnetic field measurements from the *Artemis* spacecraft which confirm previous search coil magnetometer measurements of solar wind magnetic field spectra from the *Cluster* spacecraft and which illustrate the improved electric field spectra at kinetic scales obtained with the electric field instrument on board the Artemis spacecraft (previously Themis B and C). The results are compared to theoretical predictions and high resolution numerical simulations

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