



## **Evidence for self-similarity of ionospheric scintillation at high latitude**

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GPS measurements acquired by the Canadian High Arctic Ionospheric Network (CHAIN) are used to construct the probability distribution functions of the second order difference in the signal amplitude. The distribution functions and their associated moments are determined over various temporal scales. Our analysis shows strong evidence for the existence of an inertial range in ionospheric scintillation phenomena. Qualitatively, the scale exponent revealed by the analysis is in good agreement with the findings of fluid and wave turbulence. Depending upon the signal fluctuation power spectrum, the numerical value of the scale exponent remains larger than the one obtained from Kolmogorov turbulence. Below the inertial range, the moments of distributions vary non-linearly with the time scale, also in good agreement with what is suggested by turbulence theory. At these scales, the scaling properties seem to be dominated by Gaussian statistics contrarily to what is observed at large temporal scale. This result appears inconsistent with what is known about non-self-similar scaling in turbulence.