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Magnetic turbulence spectra upstream of the terrestrial bow shock

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We present the first direct experimental determination of k-spectra of magnetic turbulence in a collisionless high-beta plasma. The measurements are taken with the Cluster four-spacecraft fleet upstream of Earth's bow shock in the foreshock region. The spectra are based on the determination of the full dispersion relation of low frequency waves. They exhibit three ranges: the injection range at small k, the inertial range, and the dissipation range. The inertial range indicates intermittency rather than Kolmogorov turbulence. Comparison of the k-spectra between the direct and the indirect measurements suggests that Taylor's hypothesis fails in the foreshock region. An anisotropy of the spectrum is also discussed.