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**Astrophysically Relevant Turbulent Magnetic Fields in Table-Top Intense-Laser Experiments** G. RAVINDRA KUMAR, GOURAB CHATTERJEE, AMIT D. LAD, PRASHANT K. SINGH, AMITAVA ADAK, P. BRIJESH, Tata Institute of Fundamental Research, Mumbai, India, Z.M. SHENG, Shanghai Jiao Tong University, Shanghai, China, AMITA DAS, SUDIP SENGUPTA, PREDHIMAN K. KAW, Institute for Plasma Research, Gandhinagar, India — We present experiments on the spatio-temporal dynamics of megagauss magnetic fields created in solid-density plasmas by intense femtosecond laser pulses. Our results display distinctive signatures of the Kolmogorov  $-5/3$  scaling in the  $k$ -spectra of the turbulent magnetic fields. About 50 picoseconds after the incidence of the main interaction laser pulse, the spectrum displays two distinct turbulent regimes, characterized by a  $-5/3$  scaling (for smaller values of  $k$ ) and a  $-7/3$  scaling (for larger values of  $k$ ), separated by a spectral “kink.” Similar spectral “knees” have been observed previously in Alfvén ion cyclotron waves in the turbulent magnetosheath of the earth as well as in turbulent processes in the solar photosphere.

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