

Abstract Submitted
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Correlation and Spectrum of Dust Acoustic Waves in a Plasma Under Microgravity Conditions¹ JOHN GOREE, BIN LIU, The University of Iowa, MIKHAIL PUSTYLNİK, HUBERTUS THOMAS, Deutsches Zentrum für Luft- und Raumfahrt, Wessling, Germany, VLADIMIR FORTOV, ANDREY LI-PAEV, ALEXANDER USACHEV, VLADIMIR MOLOTKOV², OLEG PETROV, Joint Institute for High Temperatures of the Russian Academy of Sciences, Moscow, Russia, MARKUS THOMA, Justus-Liebig-Universität Giessen, Giessen, Germany — Dust acoustic waves under microgravity conditions were investigated in an experiment using the European Space Agency's facility PK-4 on the International Space Station. A dust cloud was confined in a neon plasma powered by a radio-frequency coil. Using video cameras, waves were observed to be spontaneously excited. The density fluctuations associated with the waves were characterized by calculating a microscopic particle density. The fluctuation spectrum indicates the emergence of collective modes in a broad range of wave numbers. The persistence of the coherence of the modes was characterized by density correlation functions. An experimental measurement of the wave's dispersion relation was also obtained.

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²Our dear colleague Vladimir Ivanovich Molotkov passed away unexpectedly on July 11, 2019.

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