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Pulsed shear motion in a three-dimensional dusty plasma under microgravity conditions[1] BIN LIU, JOHN GOREE, The University of Iowa, MIKHAIL PUSTYLNIK, HUBERTUS THOMAS, Deutsches Zentrum fr Luft- und Raumfahrt, Wessling, Germany, VLADIMIR FORTOV, ANDREY LIPAEV, ALEXANDER USACHEV, VLADIMIR MOLOTKOV[2], OLEG PETROV, Joint Institute for High Temperatures of the Russian Academy of Sciences, Moscow, Russia, MARKUS THOMA, Justus-Liebig-Universitt Giessen, Giessen, Germany — Shear motion of dust particles in a strongly-coupled dusty plasma under microgravity conditions was investigated using the European Space Agency's facility PK-4 on the International Space Station. The particles were trapped in a plasma powered by a DC voltage that switches its polarity periodically. They self-organized themselves into a structure resembling a solid or a cold liquid. A manipulation laser beam pushed a slab of particles to move through the surrounding sample region. The power of the laser was modulated, causing a sudden onset of pulsed shear motion among the particles. We tracked particle motion using video cameras. Results including the spatial and temporal variations of dust fluid velocity will be shown.

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

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