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Dynamic X-ray study of the effective temperature in a three-dimensional granular gas YUJIE WANG, BINGQUAN KOU, HAOHUA SUN, YIXIN CAO, CHENGJIE XIA, XIAODAN ZHANG, Department of Physics, Shanghai Jiao Tong University, 800 Dong Chuan Road, Shanghai 200240, China, XIANGHUI XIAO, KAMEL FEZZAA, X-ray Science Division, Argonne National Laboratory, 9700 South Cass Avenue, IL, USA — We carried out a high-speed x-ray imaging study of the effective temperature of a highly agitated three-dimensional (3D) granular gas in the tracer limit using tracing particles with various densities, restitution coefficients, and sizes. Both the tracing and background particles satisfy non-Gaussian velocity distributions, in addition to an absence of energy equipartition between translational and rotational degrees of freedom.

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