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Measurement of Density Fluctuations in a Vertically Oscillated Granular Bed at the Onset of Vibrofluidization JAMES GILCHRIST, KENNETH FORD, COLIN ARMSTRONG, RICHARD EVANS, HUGO CARAM, Lehigh University — The transition from solid- to liquid-like behavior in vertically oscillated granular media is probed through measurements of density fluctuations near the point of vibrofluidization. The intracycle dynamics are used to define the critical vibration acceleration required for vibrofluidization in deep beds. Clear successive shock waves are formed, and the resulting density fluctuations initiated near the free surface propagate downward with increasing energy. When "heating" the bed by vibration, "melting" begins at the free surface.

James Gilchrist
Lehigh University

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