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Temperature Change in Melting of an Oscillated Granular Layer JENNIFER KREFT¹, MATTHIAS SCHROETER, JACK SWIFT, HARRY SWIN-NEY, University of Texas, Austin — Molecular dynamics simulations are used to study the melting of a vertically vibrated, fully three dimensional granular layer. Grains that are oscillated with non-dimensional shaking acceleration, $\Gamma < 1.3$, are solid-like, while above $\Gamma = 2.6$ the layers are fluid-like as indicated by the granular temperature and the mean square displacement of the particles. Our results show that a sharp increase in the granular temperature occurs at the transition from the solid to fluid state. A discontinuity in the plot of temperature versus Γ appears as the coefficient of normal restitution is increased, the non-dimensional frequency is decreased, or the layer depth is decreased.

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