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Kubo-Green Temperature Measurements in a Vibrated and Sheared Granular Material KAREN E. DANIELS, Dept. of Physics, NC State Univ., ROBERT P. BEHRINGER, Dept. of Physics, Duke Univ. — We perform Kubo-Green measurements on a dense granular material which is vibrated from below and sheared from above within an annular channel. Within this driven system, we make effective temperature measurements by relating the correlations at a particular rotation rate to the response to changes in the rotation rate. These measurements are made in a regime which is either above or below the transition between solid-like (crystallized, compact) and liquid-like (disordered, dilated, flowing). We find that the short-term response of the system provides an effective temperature measurement which increases with both rotation rate and volume, and changes continuously through the phase transition.

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