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Fluidization of granular media wetted by liquid ^{4}He KAI HUANG, MASOUD SOHAILI, MATTHIAS SCHROETER, STEPHAN HERMINGHAUS, Max Planck Institute for Dynamics and Self-organization — We explore experimentally the fluidization of vertically agitated PMMA spheres wetted by liquid ^{4}He at temperatures around the λ point. For wetting by normal fluid helium ($T > T_\lambda$), the critical acceleration for fluidization (Γ_c) shows a steep increase close to the saturation of the vapor pressure in the sample cell. For superfluid helium ($T < T_\lambda$) wetting, Γ_c starts to increase already at about 75% saturation, indicating that capillary bridges are enhanced by the superflow of unsaturated helium film driven by "fountain effect". Above saturation, Γ_c enters a plateau regime where the capillary force between particles is independent of the bridge volume. The plateau value is found to vary with temperature and shows a peak at 2.1 K, which we attribute to the influence of the specific heat of liquid helium on capillary bridge formation and rupture.

Kai Huang
Max Planck Institute for Dynamics and Self-organization

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