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Force transmitted to a subsurface due to particle-laden liquids ERIK WORDEN, REZA GHEISARI, PARISA MIRBOD, Department of Mechanical and Aeronautical Engineering, Clarkson University, Potsdam, New York, 13699 — In this study, we investigate force transmission due to a layer of neutrally buoyant suspension on a substrate. By applying a constant force on a solid body and pushing it through the suspension, some indentations were produced. The profile of the indentations and its relation to the size and squeezing speed of the solid body for three different volume fractions was determined. The dependence of the indentations depth on the compression height was examined and the variation of the indentations depth with strain rate was also investigated. Finally, by characterizing the response of the substrate to deformation, the force transmitted through the suspension was examined and compared to the applied force. We also studied the effect of the substrate material, solid body shape and squeezing speed, concentration of suspension, and the onset of plastic deformation.

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