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Attraction and repulsion between two static intruders immersed in a granular flow RICARDO ARTURO LÓPEZ-DE-LA-CRUZ, ITESM, Campus Monterrey, GABRIEL ARTURO CABALLERO-ROBLEDO, CINVESTAV, Unidad Monterrey — The interaction between a group of intruders immersed in a granular medium has gained attention because of the presence of flow mediated repulsive and attractive forces in projectile impact experiments [F. Pacheco-Vázquez and J. C. Ruiz-Suárez, Nat. Commun. **1**, 123 (2010)]. The origin of the repulsive interaction has been well explained by means of the jamming of the grains moving between them, but the attractive behavior is not well understood yet. One possible explanation is that these forces originate by a Bernoulli like effect, i.e. because of a pressure difference in the regions between and outside the intruders due to a difference in flow velocity. On the other side, a Casimir like effect has also been proposed, claiming that the pressure difference originates in the fluctuations of the granular medium confined by the intruders. In this work, we present a series of Discrete Element Particle simulations aiming to confirm which phenomenon is the responsible of the interactions by fixing two intruders at different separations within a granular flow.

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