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Generalized Hertz Law for Grains with Non-elliptic Contacts DI-ANKANG SUN, SUNY - Buffalo, CHIARA DARAIIO, California Institute of Technology, SURAJIT SEN, SUNY-Buffalo — Consider two elastic grains of radii of curvature R_1, R_2 , which are in intimate contact. The contact region between the grains is assumed to be elliptical (along the contact plane). It turns out that the repulsive potential between the compressed elastic grains then behave as the overlap $\delta^{5/2}$ (Hertz law), where $\delta \equiv R_1 + R_2 - z_{12}$, z_{12} being the distance between the centers of the grains when compressed. Here we show that for paraboloidal shaped grains, by modifying the contact region from elliptical to a non-elliptical geometry, we are able to modify the repulsive potential to being dependent on δ^n , where $n > 2$. Energy transport in granular chains with different contact potential laws will be briefly discussed. (Research Supported by US ARO)

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