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**Landslides on rotating and gravitating top-shaped rubble-pile asteroids** DEEPAYAN BANIK, KUMAR GAURAV, ISHAN SHARMA, Indian Institute of Technology Kanpur, India — Granular agglomerates held together by self-gravity are called rubble-piles. Several of them are believed to have a solid core. In this work we explore the surface mechanics of rotating top-shaped asteroids like Ryugu and Bennu using a shallow granular flow theory derived from mass and momentum balance laws. Additionally, occurrence of surface phenomena is likely to change their spin rate. We model this by conserving the angular momentum of the system. After a preliminary investigation of the dynamics of a single grain on a gravitating double-cone top, we study the effect of different landsliding events on its spin rate. The travelling of dunes and the effect of the Coriolis force on mass shedding are also looked into. We find that pole-ward and equator-ward motion of surface regolith increase and decrease the spin rate respectively. Dunes move towards equilibrium points defined by the location where effective tangential gravity is zero. The Coriolis force abates mass shedding when the regolith motion is retrograde i.e. azimuthal velocity is in a direction opposite to the asteroid's rotation.

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