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Effect of system and particle properties on closure relations for granular segregation models ABHINENDRA SINGH, D. R. TUNUGUNTLA, A.R. THORNTON, Univ of Twente, MULTI SCALE MECHANICS TEAM — In recent years, much effort has been made on developing valid constitutive laws for continuum models to describe kinetic sieving driven segregation in granular flows over inclined channels. Surprisingly, the existing closure relations for such continuum models have not considered factors such as particle contact stiffness, coefficient of restitution etc. Using Discrete Element method simulations, we investigate the effects of these factors on particle segregation and thereby formulate a constitutive law which takes particle properties into account. Additionally, apart from studying the effects of particle properties on segregating flows, we investigate the effects of gravity on our granular system. We consider a varied range of gravity and find that rate of segregation, for bidisperse mixtures varying in size alone, is proportional to the square root of gravity which is often assumed but was never validated. To be more precise concerning the effects of varying gravity on the steady states of bidisperse flows, varying in size alone, we investigate how the Peclet number (ratio of the segregation rate to diffusion) is affected.

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