

Master thesis / Semester project

Segregation in Granular Flows

Description: Segregation in granular flows is an important phenomenon influencing various natural and industrial processes, from landslides to pharmaceutical manufacturing [1]. This project investigates the role of particle shape in segregation dynamics within granular flows. Using numerical simulations, the student will analyze how particles of varying shapes and sizes segregate under shear and gravity-driven conditions, by analyzing the forces developed between particles. The final goal is to provide insights into the continuum modeling of segregation phenomena in different scenarios.

Prerequisites:

- Background in computational mechanics
- Strong coding skills (Python, C++)

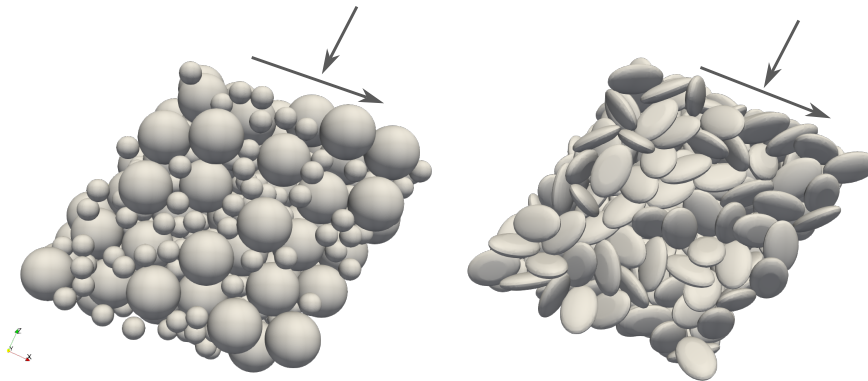


Figure 1: Simple shear flow of bidisperse spherical particles (left) and ellipsoids (right).

References

- [1] John Mark Nicholas Timm Gray. Particle segregation in dense granular flows. *Annual review of fluid mechanics*, 50(1):407–433, 2018.

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