

Toward realistic DEM of granular food flow @ Nestlé

Presentation for CHoPS-05 DEM workshop

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By M.Ramaioli

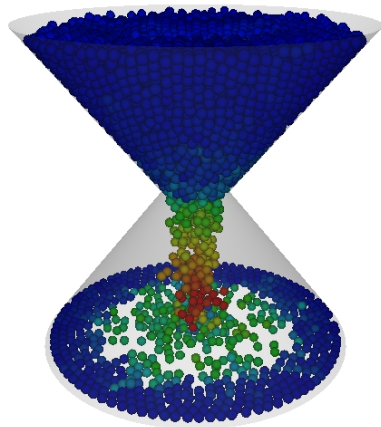


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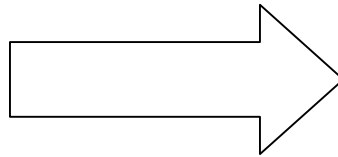
Nestlé is sponsoring a PhD project (M.Ramaioli) at EPFL aiming at...

Vision: Understanding the physics, building the competence and the tools to perform

Realistic simulations of granular food flow for practical Nestlé applications



$<10^5$ spheres /
Dry contacts /
Not-validated



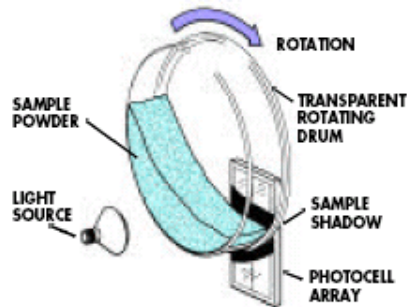
Non-spherical particles / Large-scale population / Sometimes sticky contacts



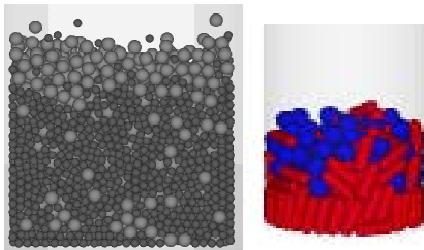
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DEM is compared with experiments to characterize powders and for validation



- Impact tests and rotating drum tests to gather restitution and friction coefficients



- Vibration-induced segregation of spherical and elongated particles



- Flow of powder beverages in dispensers

But still many limitations prevent DEM from being an industrial modelling tool...

- **Still too few validations**
- **No established procedure to gather grain properties**
- **Populations are too limited for most industrial applications**
- **Granular physics is not yet mastered sufficiently to rely on approximated “reductions” of the real system: e.g. softer particles, bigger grains, subdomains, 2D.**