CFD-DEM simulations for capture probability assessment in stirred media mills

iPAT
Institut für Partikeltechnik

Study thesis, Master thesis

Stirred media mills are widely used in fine grinding applications like food and pharmaceutical industries. Direct CFD-DEM simulations of such systems pose quite a few challenges in both modeling and numerical perspective. Population balance models (PBM) are of great use to predict the evolution of particle size distribution (PSD). But, PBM requires a variety of information to predict the PSD, one of which is the capture probability. This work deals with CFD-DEM simulations to identify capture probabilities at different scenarios and come up with empirical models with different parameters.

Work packages:
- Establish CFD-DEM simulations with relevant force models
- Capture probability assessment with respect to different parameters
- Integration/derivation of empirical models

Methods:
- LIGGGHTS, OpenFoam and CFDEMcoupling
- Matlab/Python
- Model parametrization
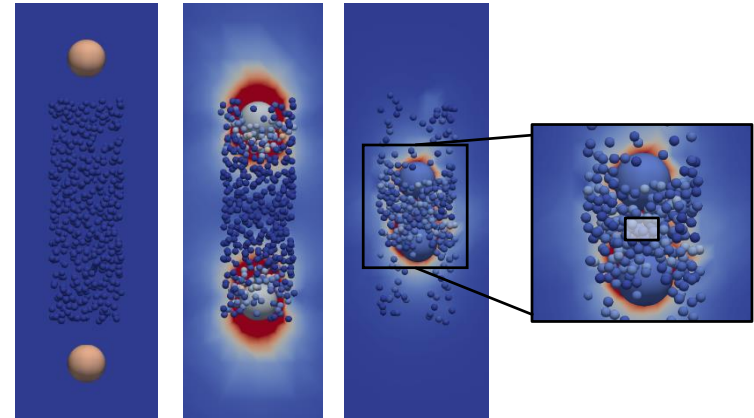
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