



národní  
úložiště  
šedé  
literatury

## **Hydro-Dynamical Interactions of Moving Rigid Particles' Cluster**

Havlica, Jaromír  
2014

Dostupný z <http://www.nusl.cz/ntk/nusl-175023>

Dílo je chráněno podle autorského zákona č. 121/2000 Sb.

Tento dokument byl stažen z Národního úložiště šedé literatury (NUŠL).

Datum stažení: 31.05.2024

Další dokumenty můžete najít prostřednictvím vyhledávacího rozhraní [nusl.cz](http://www.nusl.cz) .

## Hydro-dynamical interactions of moving rigid particles' cluster

<sup>1,2</sup>J. Havlica, <sup>1</sup>T. Trávníčková, <sup>3</sup>M. Kohout

<sup>1</sup> Institute of Chemical Process Fundamentals of the ASCR, v. v. i.; Rozvojova 2/135, 165 02 Prague, Czech Republic; tel. +420 220 390 251, e-mail: havlica@icpf.cas.cz

<sup>2</sup> University of Jan Evangelista Purkinje, České mládeže 8, Ústí nad Labem, 400 96, Czech Republic

<sup>3</sup> Institute of Chemical Technology, Technická 5, 166 28 Prague, Czech Republic

Granular systems occur in many technological applications. The overall performance of needed equipments strongly depends on the hydrodynamics of multiphase mixtures. Hydro-dynamical interactions of particles in these disperse solid-fluid systems are one of the key points for prediction of flow behavior in process apparatuses or for correct design of industrial technologies.

In this contribution we propose the hydro-dynamical interactions between moving solid particles and viscous fluid phase computing by immersed boundary method (IBM) with the open source software CFDEM. CFDEM connect together OpenFOAM (CFD solver) and LIGGGHTS (DEM solver). In our work, we focused especially on the use of local mesh refinement and parallelization of this method.

The main aim of this contribution was study of the particle's cluster. We focused on motion and interactions of the individual particles in the cluster by the evaluation of particles positions, velocities and accelerations.

Acknowledgements: This work was supported by the grant GACR P105/12/0664 from the Czech Science Foundation.