

## A COMBINED EULER-EULER EULER-LAGRANGE SLURRY MODEL

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There has been a lot of work into modelling erosion caused by slurries, however these studies are normally focused on low concentrations. The reason is usually that dense slurries are too computationally expensive to model. This presentation suggests a novel solution to reduce computational effort, using OpenFOAM to combine two solvers. The two phases of the bulk flow are modelled in the Eulerian-Eulerian reference frame, whereas the near wall region is modelled in the Eulerian-Lagrangian frame. The method aims to reduce computational time, but still keep the necessary particle impact data at the wall required for erosion modelling.

The new model consists of splitting the domain into two regions and using patch interpolation to couple them. The particles can then be injected into the second region by using the values of the second Eulerian phase from the first region. This process is carried out every time step, enabling it to be used in conjunction with geometry changes etc. as in Lopez' work [1]. If the process can be validated, it provides a promising step towards modelling dense slurry erosion.

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### References

- [1] A Lopez. Predicting surface evolution in erosion processes with OpenFOAM. [http://openfoam-extend.sourceforge.net/OpenFOAM\\_Workshops/OFW10\\_2015\\_AnnArbor/?page\\_id=146](http://openfoam-extend.sourceforge.net/OpenFOAM_Workshops/OFW10_2015_AnnArbor/?page_id=146), 2014.