

## **A Cell Based Particle Method for Modeling Dynamic Interfaces**

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We present a new algorithm for modeling interface motions. The interface is represented and is tracked using quasi-uniform meshless particles. These particles are sampled according to an underlying grid such that each particle is associated to a grid point which is in the neighborhood of the interface. The underlying grid provides an Eulerian reference and local sampling rate for particles on the interface. It also renders neighborhood information among the meshless particles for local reconstruction of the interface. The resulting algorithm, which is based on Lagrangian tracking using meshless particles with Eulerian reference grid, can naturally handle/control topological changes. The proposed algorithm also decomposes the interface into segments so that we can easily approximate surface integrals. Numerical examples in two- and three-dimensions will show that the algorithm is computationally efficient and accurate. This is a joint work with Sean Hon and Hongkai Zhao.