

Solving problems with large deformations by Smoothed Particle Hydrodynamics

Kentaro TANAKA

*Tokyo University of Marine Science and Technology,
Mechanical design laboratory*



Fig.1: Collision of free falling water mass

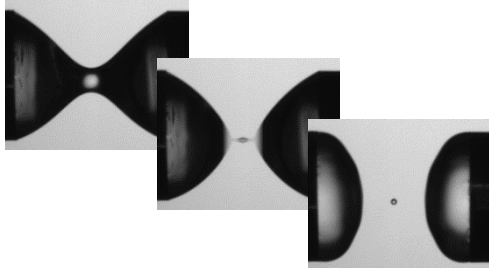


Fig.2: Satellite droplet generation from liquid bridge

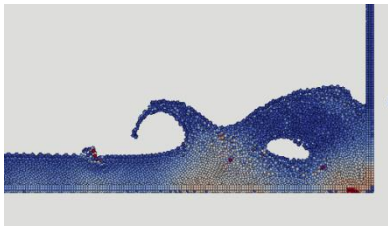


Fig.3: Example of SPH, dam break

I have some problems with large deformation of liquid-air interface. For example, collision of free falling water mass and satellite droplet generation by breakup process of a liquid bridge. Firstly, I put simplifications on these problems to treat by hand calculation. But in many cases, especially with interface-dominant phenomena, the simplification is no longer applicable. For such cases, one of the particle based numerical methods, smoothed particle hydrodynamics (SPH) method is effective approach. I will talk about my problems and the SPH method. Tribological application is also discussed.