

**ADDED MASS COEFFICIENTS AND EQUATIONS OF MOTION  
FOR AN OSCILLATING UNDERWATER EXPLOSION GAS  
BUBBLE NEAR A RIGID SURFACE**

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The behaviour of an underwater explosion gas bubble in a fluid near a rigid and fixed surface can be approximated by a low frequency oscillating sphere in an incompressible fluid. Using potential flow theory, the interaction between the sphere, its surrounding fluid and the rigid surface is characterised by added mass coefficients, which depend on the bubble radius to stand-off ratio. This paper presents these added mass coefficients and the resulting equations of motion for an oscillating sphere above a rigid and fixed surface. Predicted gas bubble responses are compared against results from a series of underwater explosion experiments and computational fluid dynamics results.