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Numerical simulation of flow past an elliptic cylinder at different angles of attack near a free surface using Level-set method RAHUL SUBBURAJ, PROF. VENGADESAN S, Indian Inst of Tech-Madras — Flow past an elliptic cylinder near a free surface will be simulated using Level-set method and Immersed boundary method. The interaction of wake behind the elliptic cylinder and the free surface will be investigated by varying parameters such as aspect ratio, angle of attack, submergence depth and Froude number. The huge umbrella of parameters covers the cases of horizontal elliptic cylinder, circular cylinder and flat plate that is already present in the literature. The fluid solver uses level-set method with one-fluid approach for tracking the interface and immersed boundary method to simulate rigid bodies. Interesting phenomena like vortex-shedding suppression, free surface deformation by vortices, etc., are expected to be found for these set of parameters.

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