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**Hydrodynamic coupling of two cylinders in an inviscid fluid**

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DARREN CROWDY, Imperial College — A general treatment of computing the irrotational flow generated by two objects moving in a planar incompressible and inviscid fluid is studied. We apply the general treatment to a specific case where two circular cylinders are moving in an arbitrary configuration. Explicit equations for the force imposed on the cylinders are derived and are shown to be dependent on the time varying nature of the conformal map used in the problem. The equations can be coupled to the rigid body motion of the body to give a closed system of equations describing their dynamics. We take a closer look into the effects of the forced oscillatory motion of one cylinder on another and the dynamics of coupled near-collision scenarios.

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