# Finite time singularities for incompressible fluids

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**Abstract**

We consider the evolution of an interface generated between two immiscible, incompressible and irrotational fluids. Specifically we study the Muskat equation (the interface between oil and water in sand) and the water wave equation (interface between water and vacuum). For both equations we show the existence of smooth initial data for which the smoothness of the interface breaks down in finite time. Joint work with A. Castro, C. Fefferman, F. Gancedo, J. Gómez-Serrano and M. López-Fernández.