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Structure of a vorticity patch bounded by a vortex sheet in strain[1]
DANIEL FREILICH, STEFAN LLEWELLYN SMITH, UCSD — Llewellyn Smith and Crowdy[*J. Fluid Mech.* **691** (2012)] studied the shape and stability of a constant pressure region bounded by a jump in the Bernoulli constnat, i. e. a vortex sheet, in an ambient irrotational straining field. We extend this work to the case of a two-dimensional vortex sheet bounding a uniform voricity patch, again in an ambient irrotational straining field. We obtain the relation between the two governing nondimensional parameters relating the strengths of the straining field, vortex sheet and vorticity in the patch, and examine the shape of the resulting vortex. We also investigate the lowest order correction for the shape of the vortex when the straining field is weak.

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