## 3. Reconnection of a counterrotating vortex pair

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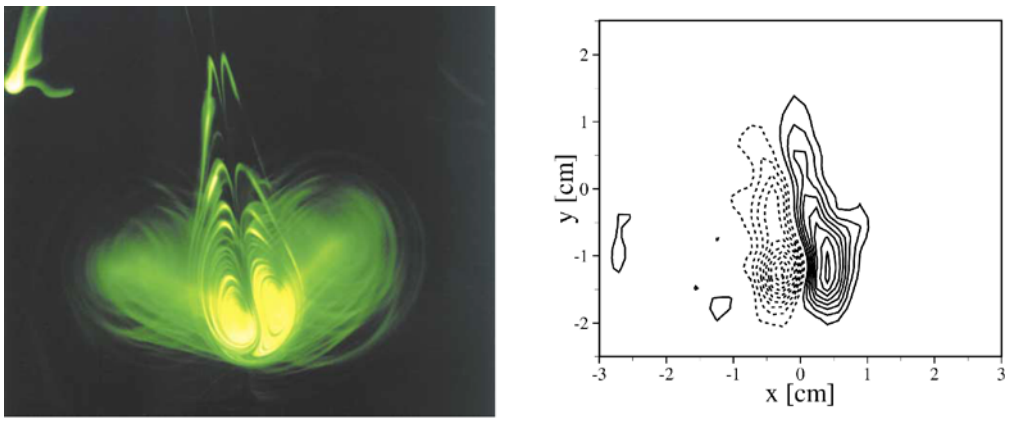


(a) lew_1a (b) lew_1b

A pair of initially straight and parallel vortices is unstable to large-scale symmetric wavy perturbations (Crow instability). This figure shows the flow in a plane perpendicular to the vortex axes, at a location where the instability brings the vortices closer together. The Reynolds number based on the initial circulation is ~2000. In the dye visualization in (a), the vortex cores deform, they elongate vertically, and a tail of dye is developing behind the descending pair. In (b), the corresponding contours of vorticity (spacing 0.8/s), obtained by Particle Image Velocimetry, show that this structure indeed corresponds to a tail of vorticity. At the end of this core interaction (vortex reconnection), the pair will have evolved into a series of vortex rings.

For more information:

Leweke, T., Williamson, C. H. K.: "Three-dimensional dynamics of a counterrotating vortex pair", Proc. 8th International Symposium on Flow Visualization (ISBN 0-9533991-0-9), G. M. Carlomagno & I. Grant (eds.), Paper 271 (1998).