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Hollow vortices in weakly compressible flows VIKAS KRISHNAMURTHY, DARREN CROWDY, Imperial College London — In a two-dimensional, inviscid and steady fluid flow, hollow vortices are bounded regions of constant pressure with non-zero circulation. It is known that for an infinite row of incompressible hollow vortices, analytical solutions for the flow field and the shape of the hollow vortex boundary can be obtained using conformal mapping methods. In this talk, we show how to derive analytical expressions for a weakly compressible hollow vortex row. This is done by introducing a new method based on the Imai-Lamla formula. We will also touch upon how to extend these results to a von-Karman street of hollow vortices.

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