

Abstract Submitted
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The flow along an external corner revisited JIM DENIER, The University of Auckland, NATHANIEL JEWELL, The University of Adelaide — We revisit the problem of the flow of an almost inviscid fluid along an external corner made from the junction of two quarter infinite plates joined at an angle $0 < \alpha < \pi/2$. The structure of the boundary layer which develops along the corner is explored using a computational approach based upon a spectral element discretisation of the steady two-dimensional boundary-layer equations. We pay particular attention to the case when the angle α is small, thus approximating the semi-infinite quarter plate problem considered by Stewartson (1961) and recently revisited by Duck & Hewitt (2012). Our results, which demonstrate a thickening of the boundary-layer near the sharp corner, will be discussed in the context of the asymptotic theory developed in the aforementioned papers.

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