

Abstract Submitted  
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**A two-dimensional model problem to explain the evolution of a jet in crossflow**<sup>1</sup> KRISHNAN MAHESH, SUMAN MUPPIDI, University of Minnesota — A two-dimensional model problem is used to study the evolution of the cross-section of a transverse jet and the counter-rotating vortex pair (CVP). The solution to the model problem shows deformation of the jet similar to that observed in a transverse jet, and also yields a CVP. These phenomena are explained in terms of the acceleration the jet experiences in the direction of the crossflow, and the pressure field around the jet. The initial stages of the jet's evolution are at constant acceleration while the later stages are at constant velocity. The effects of Reynolds number and velocity ratio on the evolution of the jet are used to explain the dependence of CVP formation on velocity ratio as observed experimentally.

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