

Abstract Submitted  
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**Interaction of Multiple Adjacent Jets in Cross Flow** EPHRAIM GUTMARK, IRENE IBRAHIM, University of Cincinnati, Department of Aerospace Engineering — Subsonic wind tunnel experiments are conducted to study the behavior of multiple adjacent jets exhausting into cross flow. The interaction between the jets and the effect of one jet on the other(s) relative to single jet in cross-flow, is investigated. Parameters studied include: distance between the jets, their alignment, injection momentum and angle, and jets shape and diameter. The comparison is based on the analysis of penetration, spread and rate of decay of each jet as compared to the other(s) and to single jets. The size, location, distribution and magnitude of characteristic regions within the flow such as the reverse flow and wake regions is studied. Quantitative velocity fields are obtained using Stereoscopic Particle Image Velocimetry (SPIV). In a single jet in cross-flow, mixing and freestream entrainment are interdependent and the mixing mechanisms which take place in the wake region are different from those in the jet region. In the wake region vertical vortices actively entrain fluid from the freestream and enhance mixing. This study extends this knowledge into the realm of multiple jets.

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