

Abstract Submitted  
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**Centrifugal instability of the wake-dominated curved compressible mixing-layers.**<sup>1</sup> LI LIN<sup>2</sup>, SHARON STEPHEN<sup>3</sup>, University Of Birmingham

— The mixing layer is an interfacial region between two moving homogeneous fluids of different density, compressibility, velocity and temperature. Görtler instability is a type of centrifugal instability which could arise from the mixing layer system owing to the dynamical effect of centreline curvature. The linear development of Görtler vortices at high Reynolds number within both stably and unstably curved compressible mixing layers is investigated. The purpose behind this investigation is to determine if the presence of a Görtler mode could enhance the mixing of two fluids in certain physical situations such as the mixing between fuel and oxidizer within a scramjet engine for the propulsion of hypersonic aircraft. The investigation is made by examining the growth rate and the location of the Görtler modes in the limit of larger Görtler number. An analytical Gaussian wake model is first used to predict the development of the Görtler modes. A more accurate basic wake model has also been obtained numerically to compare with the earlier prediction.

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