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The Effect of Surface Waviness on the Growth and Development of TS Waves[1] CHRISTIAN THOMAS, SHAHID MUGHAL, Imperial College London, RICHARD ASHWORTH, Airbus Group Innovations — The growth and development of TS wave disturbances on an infinitely swept wing are investigated, where surface waviness is imposed along the chordwise direction. Boundary layers are extracted directly from Reynolds Averaged Navier-Stokes solutions, which allows a stability analysis to be undertaken for many flow systems that may include regions of boundary layer separation. Stability analysis is then carried out using both PSE and LNS methods. The effects of varying the wavelength, amplitude and phase of the waviness are considered and the impact on the development of the boundary layer and TS wave disturbances are investigated. It is found that wavy surfaces can significantly affect the amplification rates of the TS wave disturbances, causing large variations in both the onset of the instability and transition.

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