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The effect of large aspect ratio wing yaw on active separation control[1] PHILIPP TEWES[2], LUTZ TAUBERT[3], ISRAEL WYGNANSKI[4], The University of Arizona — The applicability of the boundary layer independence principle to turbulent boundary layers developing on infinitely yawed wings, suggested that active separation control might be carried out differently to the two presumably independent developing boundary layers. At low incidence or flap deflection the control of the spanwise component of the flow is effective provided the aggregate number of actuators is small. In this case the actuator jets provide jet-curtains that virtually eliminate the spanwise flow component of the flow in their vicinity. At higher incidence or flap deflection, the focus of the active separation control has to shift to the chordwise component that has to overcome a high adverse pressure gradient. The idea was proven experimentally on a flapped wing based on a NACA 0012 airfoil that could be swept back and forward while being suspended from a ceiling of a wind tunnel connected to a six-component balance. The experiments were carried out at Reynolds numbers varying between 300,000 and 500,000.

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