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Effect of Large Bulk Viscosity on High-Speed Separation[1] FATEMEH BAHMANI, MARK CRAMER, Virginia Polytechnic Institute and State University — We examine the effect of large bulk viscosity on the classical problem of two-dimensional shock boundary layer interaction. The flow is taken to be steady, supersonic and the plate is taken to be flat and adiabatic. The boundary layer is taken to be laminar and the fluid is modeled as a perfect gas with a bulk viscosity which is large compared to its shear viscosity. The flow details are computed using a fifth order weighted essentially non-oscillatory (WENO) finite difference scheme and 3rd order Runge Kutta scheme for the spatial and temporal discretizations. The primary result of interest is the suppression of separation when the fluid has a bulk viscosity which is large compared to the shear viscosity.

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