Solution of 2-D Euler Equations: NACA 0012 Airfoil

Spatial discretisation schemes:

- Central scheme with scalar artificial dissipation:
  \[ \sigma = 7.5, \epsilon = 0.8, k^{(2)} = 0.5, k^{(4)} = 1/128 \]

- Roe’s upwind scheme:
  \[ \sigma = 4.5, \epsilon = 0.8, K = 20 \]

Boundary conditions:

\[ M_{\infty} = 0.8, \alpha = 1.25^\circ, p_{\infty} = 1.0 \cdot 10^5 \text{ Pa}, T_{\infty} = 288.0 \text{ K}. \]

Convergence history.
Mach number distribution around the airfoil (Roe’s scheme).

Mach number over the $x$-axis.