NACA 0012

U_mag = 135 m/s

tgt: find Alpha such that -Cl^3/Cd^2 is maximize

differntly from the previus testcase, the quantity minimize here are derived from the corrected quantity, the case aim to test the robustness

of the correction

description: pressure distribution is used to correct the course model

from the pressure distribution is possible to compute the

max suction of the airfoil and the aero coefficient, the optimization aim to find the

condition in which the fitness function is minize without exceeding the Valarezo condition

- the course solver uses Hess-Smith to compute the pressure distribution P_HS

- the fine solver uses Xfoil in viscous configuration to compute P_XF

- the course method is corrected through a linear operator such that:

 $P_HS_{corr}(x) = P_XF(x_c) + Skf^*(P_HS(x) - P_HS(x_c));$

Optimization Cycle X = alpha

* in the first iteration Set the Cycle P_XF(x_c) e P_HS(x_c) set to be zero* P HS is not corrected Skf set to be eye WHILE iter < iter_max & err > toll Course Optimization (star from 3 different point) > fmincon $> c(x) = -CI(P_HS_CORR(x)).^3 / Cp(P_HS_CORR(x)).^3$ > all coefficient are computed from the pressure distribution > nonliner constrain is set to prevent c(x) > 14>MaxFunctionEvaluations = 50 > OptimalityTolerance = 0.005 > FunctionTolerance = 0.005 > StepTolerance = 0.01 -> x_c = risultato opt Fine computation at $x = x_c$ > viscous; Re = 9M Error Assessment > Err = abs(P_XF(x_c) - P_HS_corr(x_c)) Computation of the correction operator