

# Numerical aerodynamic optimization with stability constraints of Martian aircraft

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**Abstract.** The aim of this paper is to conduct a numerical optimization of a tailless aircraft designed for atmospheric flight on Mars. The initial design required elevon deflection to achieve a trim condition for the cruise phase, which significantly affects the lift to drag ratio in the case of tailless aircraft. The following changes in geometry were considered within the scope of this paper to improve aircraft performance and stability: twist implementation, airfoil change and side plate modification.