

Dear Dr. Schaub,

Please find enclosed our manuscript “Trajectory Design of a Rocket-Scramjet-Rocket Multi-Stage Launch System” by Sholto Forbes-Spyratos, Michael Kearney, Michael Smart and Ingo Jahn, which we would like to submit to the Journal of Spacecraft and Rockets. All authors have approved the manuscript and agree with its submission to this journal.

Our paper develops an optimal trajectory shape for a rocket-scramjet-rocket launch system delivering a payload to low Earth orbit, with the aim of maximising payload mass fraction. The pseudospectral method of optimal control was utilised along with a detailed simulation of the vehicle dynamics. The theoretical payload mass fraction of the vehicle was able to be significantly improved, and the trajectory investigated, with positive implications for future vehicle designs.

Thank you for your consideration.

Sholto Forbes-Spyratos