

# Research project meeting summary: Trajectory Module for Launcher MDAO

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- 1 Review of previous work

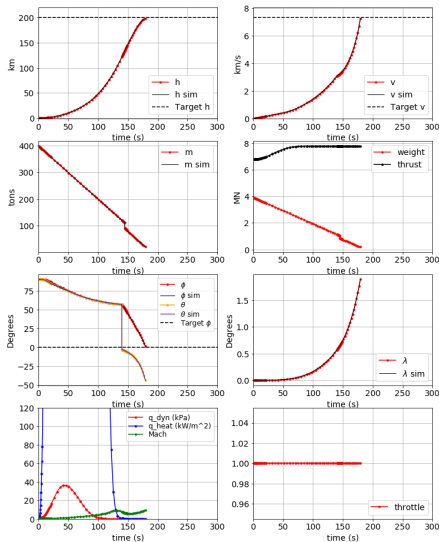
- 2 Key points discussed

- 3 Future actions

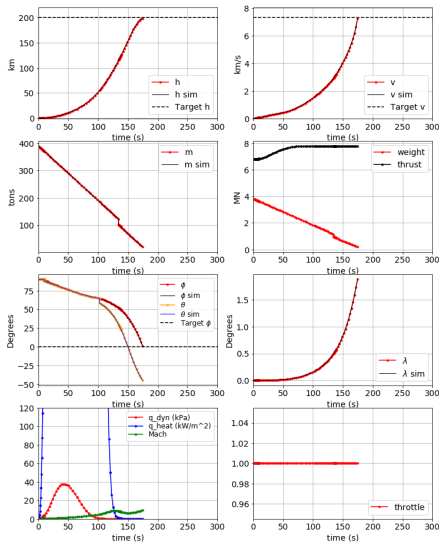
Optimization of  $mp_1$  and  $mp_2$  for TSTO with fairing separation.

- Two approaches for the 3 design variables
  - Optimization outside of "traj" component
  - Optimization inside "traj" component but outside the phases
  - both take around 15 min to solve. limited to 700 gradient evaluations.
- Exoatmos phase is divided in to 3 parts, for the current SSTO probably it should be reorganized as heat flux treshold is reached earlier.
  - first stage flight with fairing
  - second stage flight with fairing
  - second stage flight without fairing

# Review of previous work. Loop outside "traj" | sae



# Review of previous work. Loop inside "traj"



- The results presented here can be used as initialization to check if convergence time decreases.
- It would be good to decouple the 2 design parameters controlling the mass of the second stage.
- It would be a good idea to simplify the problem to ignore fairing jettison and use that result as initialization
- Contact Bob and Justin via GitHub to check if the approach to constrain mass is the correct one

Implement the things discussed in the previous slide  
Next meeting 2020/09/23 at 10h00