RotorFF

Syntax

[Vt,wt,Vp,wp,Pt,Tp] = RotorFF(alfa)

Description

[Vt,wt,Vp,wp,Pt,Tp] = RotorFF(alfa) returns the characteristic curves for rotor in forward flight for both constant thrust and power and gives in output also the relative x and y values. It requires in input the angle of attack in degrees.

The plot avaiable are:

- For constant Thrust:
  - -w versus V
  - -P versus V
- For constant Power:
  - -w versus V
  - -T versus V

where w = induction, V = asymptotic velocity, T = Thrust, P = Power

Examples

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alfa=0;

[Vt,wt,Vp,wp,Pt,Tp] = RotorFF(alfa)
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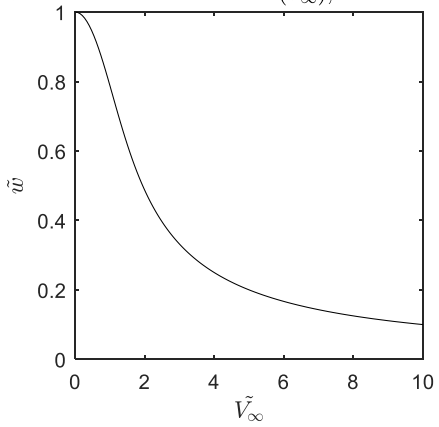
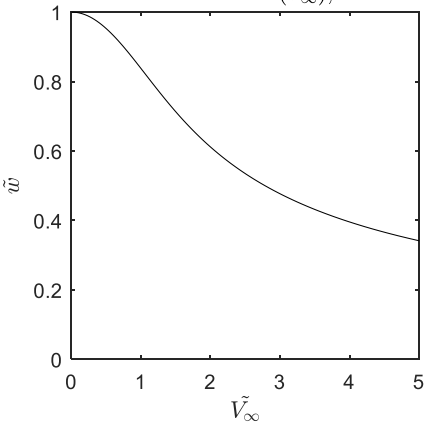
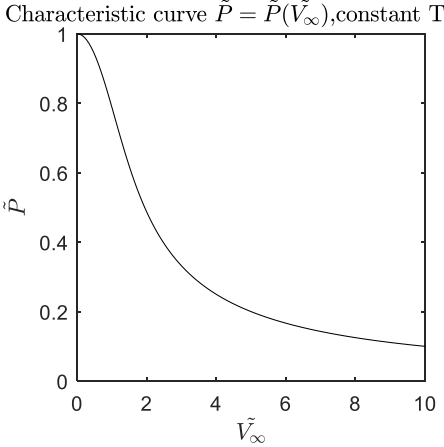
Characteristic curve $\tilde{w} = \tilde{w}(\tilde{V_\infty})$,constant Thrust



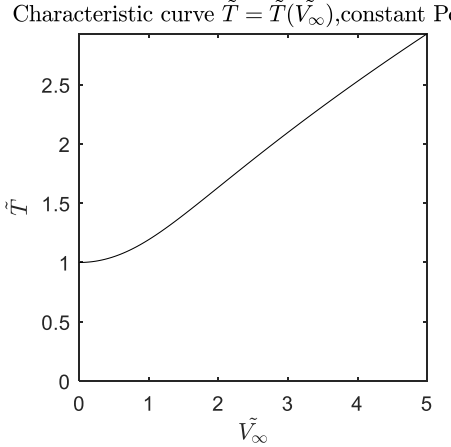
Characteristic curve $\tilde{w} = \tilde{w}(\tilde{V_\infty})$,constant Power



Characteristic curve $\tilde{P} = \tilde{P}(\tilde{V_\infty})$,constant Thrust



Characteristic curve $\tilde{T} = \tilde{T}(\tilde{V_\infty})$,constant Power



Input Arguments

Alfa – angle of attack

Output Arguments

Constant Thrust

Vt – asymptotic velocity
wt – induction
Pt– power

Constant Power

Vp – asymptotic velocity
wp– induction
Tt– power

All the values are non-dimensional in respect to their value in hovering (for V is used induction in hovering).

Reference

R. Tognaccini. "Lezioni di aerodinamica dell'ala rotante" *2019* pp. 84-85.