

VG100: INTRODUCTION TO ENGINEERING

Velocity Triangles Tip Vortex & Ducted Fan

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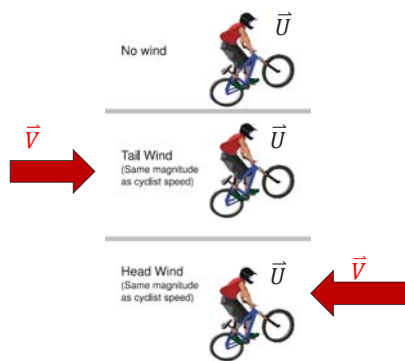
Preview

- Guest Lecture by Prof Shen
- Velocity Triangles
- Ducted and ductless fan



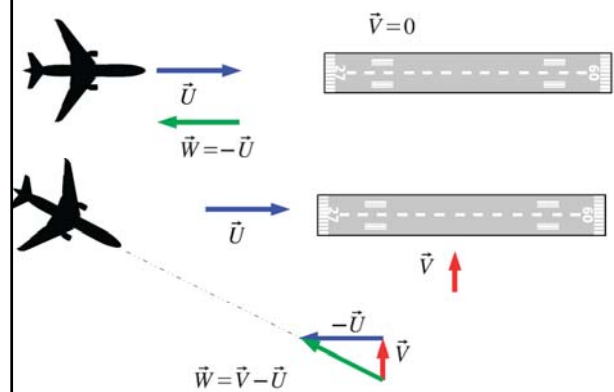
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Relative (\vec{w}), Absolute (\vec{v}), and Frame (\vec{u}) Velocities

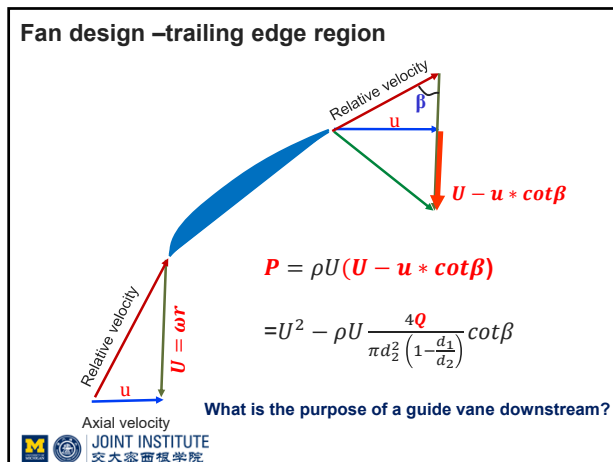


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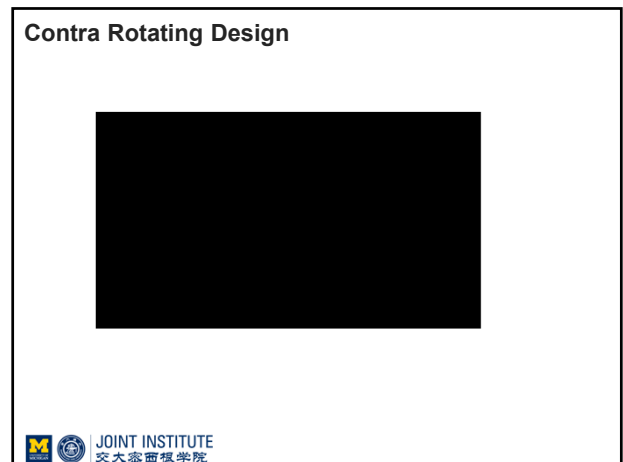
Relative, Absolute, and Frame Velocities



4



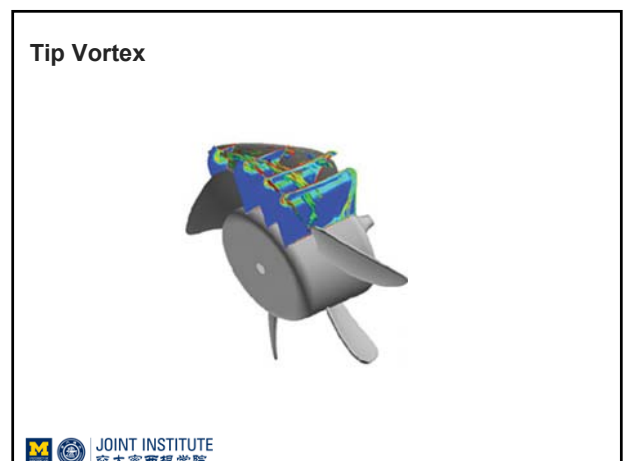
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Tip Vortex



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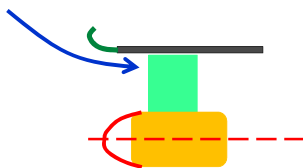
Ducted or Ductless

- Ducted fan can produce a lot more thrust (could be twice as much) than an open rotor of the same size.
- Other factors to consider?
 - ☐ Weight
 - ☐ Cost
 - ☐ Space.
 - ☐ Manufacturing tolerances
 - ☐ Friction loss with duct wall

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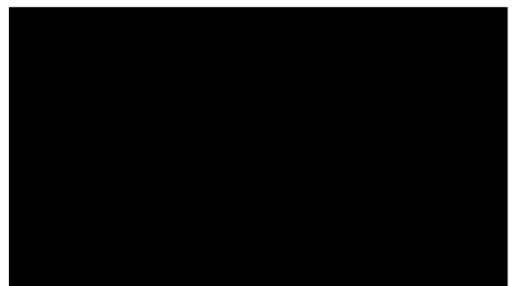
Some Possible Follow-up Project Ideas

- Better hub design?



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An Aero-Engine



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An Aero-Engine

