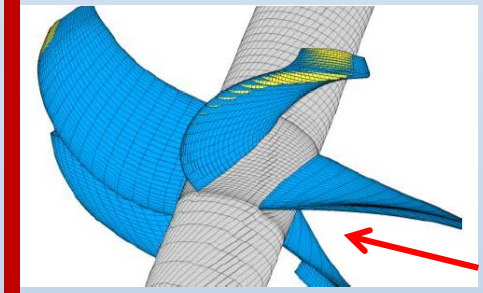
CE397-32/ASE382Q-Hydrodynamics of Propulsors & Turbines

Offered Fall 2020, Tuesdays and Thursdays, 9:30-11:00

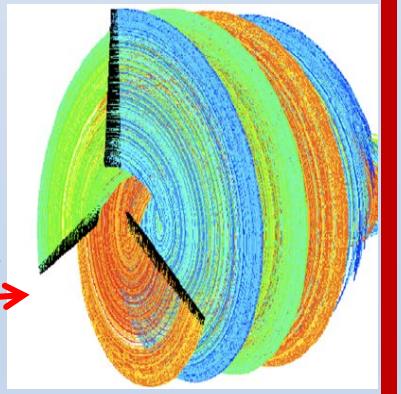
Instructor: S. A. Kinnas, ECJ 8.610 (kinnas@mail.utexas.edu)

What is the objective of the course? Cover the fundamentals of hydrofoil and blade theory and its applications to the design of propulsors and turbines

What topics will it cover?



- 2-D hydrofoil and 3-D lifting surface theory
- Actuator disk and lifting line theory
- Modeling via vortex lattice, panel methods and Reynolds-Averaged Navier-Stokes solvers
- Optimum loading and blade design techniques for propellers …and…turbines
- Unsteady blade and shaft forces
- Modeling of sheet cavitation



What are the prerequisites? Graduate standing or consent of instructor

What will be the textbook? *Propulsion – by J.E. Kerwin and J.B. Hadler, 2010*; supplemented by numerous helpful class-notes + educational interactive learning tools