Theroy of ship propulsion

1. 2D flat plate boundary layer theory

Outer solution (low Rn)

Inner solution

Velocity distribution

Turbulent case

1. Theory of ship propulsion and energy

Example of extrapolation method

ODE solution

Outer solution

Inner solution

Matlab project

1. Outer potential flow around 3D body

Source distribution, Doublet distribution, vortex sheet

Solve with Green function

Numerical computation

Marine Hydrodynamics

1. linearized free-surface condition
2. plane progressive waves & finite depth effect
3. nonlinear effects
4. mass transport
5. superposition of plane waves
6. group velocity & wave energy
7. two dimensional & three dimensional ship wave
8. the method of stationary phase
9. energy radiation and wave resistance

Seakeeping

1. added resistance and involuntary speed loss in waves
2. definition of steadiness
3. ocean waves
4. statistics of ship responses
5. short term and long term prediction
6. potential theory
7. wave-induce motion and resistance
8. energy balance
9. equilibrium of steady force
10. power and revolution curve
11. nominal speed loss