

TOPICS

- First order equations
 - linear equations
 - conservation laws, shocks, entropy
 - geometrical optics
- one dimensional wave equation
 - D'Alembert
 - energy methods
 - characteristics
- one dimensional heat equation
 - explicit formula
 - energy methods
 - maximum principle
- Duhamel principle
- Wellposedness
- half space - even/odd functions
- polar coordinates
- Laplace/Poisson/Helmholtz equation
 - mean value
 - Rayleigh quotient
 - Dirichlet principle
- Sturm Liouville
 - convergence
 - eigenvalues, eigenfunctions
- Separation of Values
 - 1d,2d and 3d
 - inhomogenous problem
 - Bessel equation
 - polar coordinates
- Green's function
- distributions - delta function
- finite elements