Spatiotemporal Modeling and Simulation

04 :: Recap of vector analysis

Topic

Recap of vector analysis

Program

Scalar and vector fields
Differential operators on fields
Flux and work of vector fields
Integral theorems
Conservative fields and differential equations
Self-test questions

Learning goals

Be familiar with the differential operators and the Nabla notation.
Be able to prove compute rules of differential operators.
Know the theorems of Gauss and Stokes by heart and be able to explain them physically.
Be able to define “potential” and “state variable”.
Know when to use Laplace and Poisson equations to describe a field.