**COMPUTATIONAL ELECTROMAGNETISM WITH MATLAB**

**MAXWELL’S EQUATIONS**

View the list of physical quantities for electromagnetism

A complete and correct formulation of the fields of classical electromagnetism is contained in Maxwell’s equation. The four Maxwell’s equation in differential and integral forms expressed in terms of the fields



Equation 1: Gauss’s law for the electric field – electric flux begins and ends on a charge or at infinity

(1A) 

(1B) 

Equation 2: Gauss’s Law for magnetic fields – no magnetic monopoles; B – field lines don’t begin or end

(2) 

Equation 3: Faraday’s law – law of electromagnetic induction; a changing **** produces an 

(3) 

Equation 4: Ampere’s law:  is produced by a current and by changing 

(4B) 

(4B) 

The fields interact with charge mainly through the Lorentz force



The electric flux through a closed surface is proportional to the charge enclosed by the surface

setThe time dependent Maxwell’s equations in differential form and integral form can be written as:

Faraday’s Law

(1) 

We will consider two Consider a region in which there are no electric or magnetic sources

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