**Generalized Poisson Equation of Electrodynamics**

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Poisson Equation: 

 

 

In general, for any vector field 

 

Take the gradient of Poisson eq. , and we have

 

because we write 

But the curl of  is the time derivative of the  field (eq. ),

 

and the time derivative of  is the displacement current (from eq. ,

 

which gives the

**GENERALIZED POISSON EQUATION OF ELECTRODYNAMICS**

 