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Magnetic current and new modifications of Maxwell's equations

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Maxwell's equations are the main foundation of the current communication technology; however, they are still incomplete with some ambiguities and unknown parameters. Magnetic current is apparently the main missing part of these equations [1]. In this talk, we resolve to revise these equations and the conventional definitions of the terms and parameters from the beginning merely based on logical theory to justify all measurements so far. These revisions will be initiated by modifying Bohr's Model and physical differentiations of magnetic and electrical fluxes to justify all electromagnetic phenomena under a consistent umbrella. Consequently, we can theoretically present a rational illustration of magnetic current and amend the contradictions and inconsistencies in the current models and theory of electromagnetic waves. As given in current Maxwell's equations given in (1)-(2), these equations are not balanced where the right sides of these equations consist of two Equ. (1) and three components Equ.(2).

$$\nabla \times E = -M_i - \mu \frac{\partial H}{\partial t} \quad (1)$$
$$\nabla \times H = J_t + J_c + \varepsilon \frac{\partial E}{\partial t} \quad (2)$$

Few researches have been theoritically done in the literature to find this missing term where it has been defined as a multiplication of a coefficient by magnetic field in [2]. While this definition matemathically provides a substantial model of this missing term, it does not discuss the physical interperation of the used coefficient in the definition. In this talk, we will discuss the physical interpretation of this coefficient where it can be modeled as the resistivity. Therefore the first two equations can be presented as follows:

$$\nabla \times E = -M_i - \rho H - \mu \frac{\partial H}{\partial t} \quad (3)$$
$$\nabla \times H = J_t + \sigma E + \varepsilon \frac{\partial E}{\partial t} \quad (4)$$

As provided in (3)-(4), the two equations are balanced with the new physical interpretation of magnetic current, the missing term in the Maxwell's equations.

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