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A circular current's bi-Cartesian magnetic dipolar model and the bias in deriving fields from own potentials

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Abstract content
 (Max 300 words)
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Traditional reliance on deriving fields from potentials where there is symmetry does not explain generally why this may or may not be successful. Our bi-Cartesian dipolar model of a circular current shows that magnetic fields at any field point are derivable from associated Cartesian components of the magnetic vector potential. Then clarifying the bias in deriving fields from own potentials becomes fairly easy. This is done in parallel with that a simple axial electric dipole. It also shows that the traditional an hoc definition of a circular current's magnetic dipolar moment is based on functionally limited component magnetic vector potentials, and is icorrect by a factor of 2.

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Primary author: Dr CHIRWA, Max (Walter Sisulu University)Presenter: Dr CHIRWA, Max (Walter Sisulu University)Session Classification: Poster2

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