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Modified Fractional Curl Operator

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Abstract : Applying fractional calculus in the field of electromagnetics shows significant results. The fractionalization of the conventional curl operator leads to having additional solutions to an electromagnetic problem. This work restudies the concept of the fractional curl operator considering fractional time derivatives in Maxwell's curl equations. In that sense, a general scheme for the wave loss term is introduced and the degree of freedom of the system is affected through imposing the new fractional parameters. The conventional case is recovered by setting all fractional derivatives to unity.

Keywords : curl operator, fractional calculus, fractional curl operators, Maxwell equations
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