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Lorentz Covariance of the Maxwell Equations ROLLIN S. ARMOUR, JR., JOSE L. BALDUZ, JR., Department of Physics, Mercer University, Macon, Ga — We seek all linear transformations of the Maxwell variables and spacetime coordinates that leave Maxwell's equations form-invariant. Form-invariance forces coordinate transformations to leave the Minkowski interval invariant allowing five different four-dimensional Lorentz spacetimes, one real and four complex, corresponding to coordinate transformations under the (1/2,1/2), (0,0)+(0,1), (0,0)+(1,0), (1/2,0)+(1/2,0), and (0,1/2)+(0,1/2) representations of the Lorentz group. In each spacetime, Maxwell's equations remain covariant under at least *two different* Lorentz transformation rules for the Maxwell variables, with charge invariance, gauge invariance, and a covariant Lorentz four-force accompanying at least one of these rules. (In four-vector spacetime, the second rule is *spin-1/2*. See Found. Phys. **34**, 815, 2004.) The Maxwell Lagrangian density is the same in every case, and primary field invariants are always formed with the Minkowski metric, yielding a common set of Maxwell invariants and conservation laws under every Lorentz transformation of the Maxwell variables in all five Lorentz spacetimes.

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