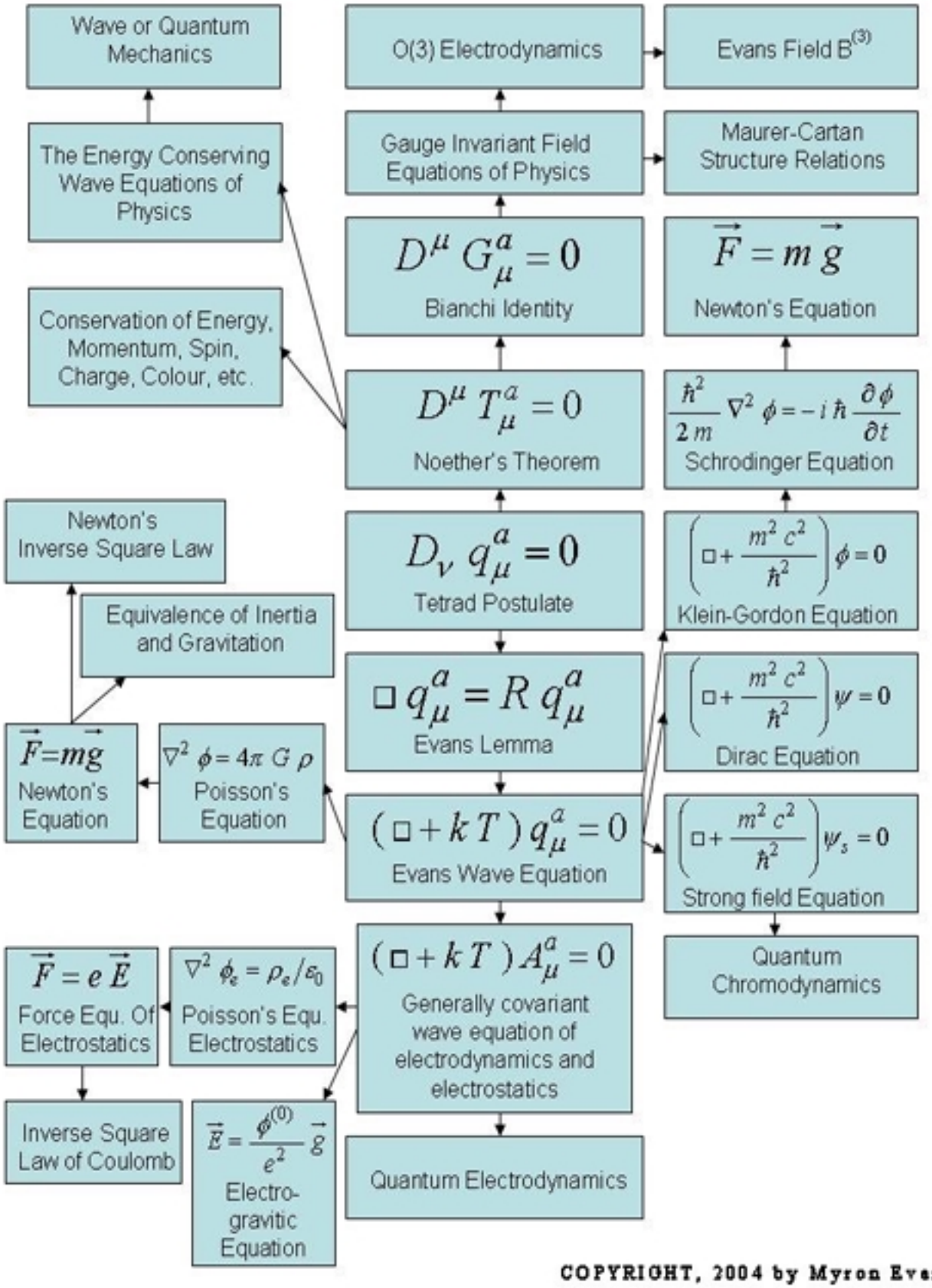

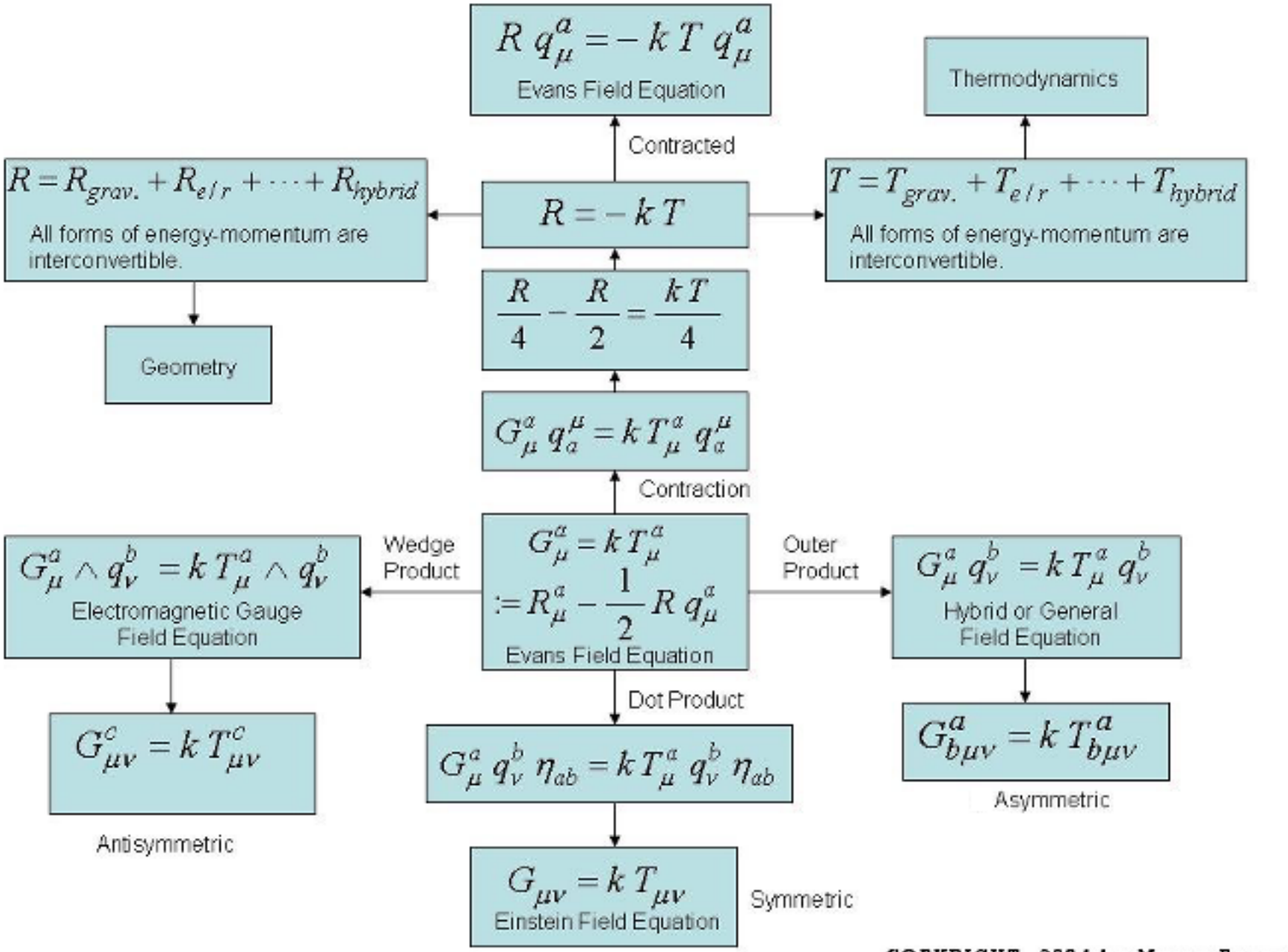

TABLE: FIELD THEORIES OF GENERAL RELATIVITY

ORIGIN	TYPE	POTENTIAL FIELD	GAUGE FIELD	FIELD EQUATION (CLASSICAL MECHANICS)	WAVE EQUATION (QUANTUM MECHAINS)	CONTRACTED ENERGY / MOMENTUM	SCALAR CURVATURE
Einstein / Hilbert (1915)	Central Gravitational	$q_\mu^{a\,(S)}$	$R_{b\mu\nu}^{a}\ ^{(A)}$	$R_\mu^{a\,(S)} - \frac{R}{2} q_\mu^{a\,(S)} = k\, T_\mu^{a\,(S)}$	$(\Box + kT) q_\mu^{a\,(S)} = 0$ Evans (2003)	T_{grav} (gravitation)	R_{grav} (gravitation)
Evans (2003)	Unified	q_μ^a	$R_{b\mu\nu}^a$	$R_\mu^a - \frac{R}{2} q_\mu^a = k\, T_\mu^a$	$(\Box + kT) q_\mu^a = 0$	T_{unified} (hybrid energy)	R_{unified} (hybrid energy)
Evans (2004)	Dark Matter	$q_\mu^{a\,(A)}$	$\tau_{\mu\nu}^c$	$R_\mu^{a\,(A)} - \frac{R}{2} q_\mu^{a\,(A)} = k\, T_\mu^{a\,(A)}$	$(\Box + kT) q_\mu^{a\,(A)} = 0$	T_{dark} (dark energy)	R_{dark} (dark energy)
Evans (2003) Evans (2004)	Electro-dynamics	$A_\mu^{a\,(A)} = A^{(0)}\, q_\mu^{a\,(A)}$	$A^{(0)}\, \tau_{\mu\nu}^c$	$G_\mu^{a\,(A)} = A^{(0)} k\, T_\mu^{a\,(A)}$ $= A^{(0)} \left(R_\mu^{a\,(A)} - \frac{R}{2} q_\mu^{a\,(A)} \right)$	$(\Box + kT) A_\mu^{a\,(A)} = 0$	$T_{\text{e/m}}$ (electro-dynamic)	$R_{\text{e/m}}$ (electro-dynamic)
Evans (2003) Evans (2004)	Electro-statics	$A_\mu^{a\,(S)} = A^{(0)}\, q_\mu^{a\,(S)}$	$A^{(0)}\, R_{b\mu\nu}^{a}\ ^{(A)}$	$G_\mu^{a\,(S)} = A^{(0)} k\, T_\mu^{a\,(S)}$ $= A^{(0)} \left(R_\mu^{a\,(S)} - \frac{R}{2} q_\mu^{a\,(S)} \right)$	$(\Box + kT) A_\mu^{a\,(S)} = 0$	$T_{\text{e/s}}$ (electrostatic)	$R_{\text{e/s}}$ (electrostatic)

1) Duality: $\tau^c = \varepsilon_a^{cb}\, R_b^{a\,(A)}$

2) Basic Matrix property: $q_\mu^a = q_\mu^{a\,(S)} + q_\mu^{a\,(A)}$

Development of Maxwell-Heaviside Field Theory Into Generally Covariant Electrodynamics