

1) 112(8): Simple Example of the Bianchi Identity and its Hodge Dual.

The Bianchi identity may be constructed from:

$$\begin{aligned} [D_0, D_1] \nabla^\rho &= D_0(D_1 \nabla^\rho) - D_1(D_0 \nabla^\rho) \\ &= R^\rho{}_{\sigma 01} \nabla^\sigma - T^\lambda{}_{01} D_\lambda \nabla^\rho \quad - (1) \end{aligned}$$

The Hodge dual of (1) with lowered indices is:

$$\begin{aligned} [D_2, D_3] \nabla^\rho &= D_2(D_3 \nabla^\rho) - D_3(D_2 \nabla^\rho) \\ &= R^\rho{}_{\sigma 23} \nabla^\sigma - T^\lambda{}_{23} D_\lambda \nabla^\rho \quad - (2) \end{aligned}$$

Equations one and two are so & examples of:

$$[D_\mu, D_\nu] \nabla^\rho = D_\mu(D_\nu \nabla^\rho) - D_\nu(D_\mu \nabla^\rho) \quad - (3)$$

So it follows that:

$$D \wedge \tilde{T} := \tilde{R} \wedge \eta \quad - (4)$$

is an example of

$$D \wedge T := R \wedge \eta \quad - (5)$$