

$$\mathcal{L}(\mathcal{A}:\mathcal{A}) = d_j (d\mathcal{A}:\mathcal{A})^i \star * \mathcal{A}^j \star \mathcal{A}^\ell \mathcal{A}$$

$$\mathcal{L}(\mathcal{A}:\mathcal{A}:\mathcal{A}) = (d\mathcal{A})^i \star * \mathcal{A}^j \star \mathcal{A}^\ell \mathcal{A}_{\ell i} = \left( d\mathcal{A}_j^i - \mathcal{A}_j^k \mathcal{A}_k^i \right) \star * \mathcal{A}^j \star \mathcal{A}^\ell \mathcal{A}_{\ell i}$$

$$\mathcal{A} = \mathcal{A} \mathcal{A}^{-1}$$

$$\mathcal{A} = \mathcal{A} \mathcal{A} \mathcal{A}^\sharp$$

$$\mathcal{A} = \mathcal{A} \mathcal{A} \mathcal{A}^{-1} + d\mathcal{A} \mathcal{A}^{-1}$$

$$\mathcal{L}(\mathcal{A}:\mathcal{A}) = \mathcal{L}(\mathcal{A}:\mathcal{A})$$

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$$\mathcal{L}(\mathcal{A}:\mathcal{A}) = d_j \underbrace{d\mathcal{A}:\mathcal{A}}^i \star * \mathcal{A}^j \star \mathcal{A}^\ell \mathcal{A}_{\ell i} =$$

$$\left( d\mathcal{A} \underbrace{d\mathcal{A}:\mathcal{A}}^{-1} + d\mathcal{A} \mathcal{A}^{-1} \right)^i \star * \mathcal{A}_m^{-1j} \star \mathcal{A}_n^{-1\ell} \mathcal{A}_\ell^p \mathcal{A}_{pq}^i \mathcal{A}^q$$

$$= \mathcal{A}_m^{-1j} \mathcal{A}_j^\mu \underbrace{dd\mathcal{A}:\mathcal{A}}_\mu^{\nu-1i} \mathcal{A}_\nu^{-1i} \mathcal{A}_i^q \star * \mathcal{A}^m \star \mathcal{A}_n^{-1\ell} \mathcal{A}_\ell^p \mathcal{A}_{pq}^i = \underbrace{dd\mathcal{A}:\mathcal{A}}_m^q \star * \mathcal{A}^m \star \mathcal{A}_{pq}^p \mathcal{A}^q$$

$$\mathcal{L}(\mathcal{A}:\mathcal{A}:\mathcal{A}) = \underbrace{d\mathcal{A}}_j^i \star * \mathcal{A}^j \star \mathcal{A}^\ell \mathcal{A}_{\ell i} = \left( d\mathcal{A} \mathcal{A} \mathcal{A}^{-1} + d\mathcal{A} \mathcal{A}^{-1} \right)^i \star * \mathcal{A}_m^{-1j} \star \mathcal{A}_n^{-1\ell} \mathcal{A}_\ell^p \mathcal{A}_{pq}^i \mathcal{A}^q =$$

$$\mathcal{A}_m^{-1j} \mathcal{A}_j^\mu \underbrace{d\mathcal{A}}_\mu^{\nu-1i} \mathcal{A}_\nu^{-1i} \mathcal{A}_i^q \star * \mathcal{A}^m \star \mathcal{A}_n^{-1\ell} \mathcal{A}_\ell^p \mathcal{A}_{pq}^i = \underbrace{d\mathcal{A}}_m^q \star * \mathcal{A}^m \star \mathcal{A}_{pq}^p \mathcal{A}^q$$