Basic conventions

| Minkowski metric tensor | Totally antisymmetric tensor | Four-momentum | Four-momentum norm | Massive rest-frame |
|---|---|---|---|---|
| $\eta_{\mu\nu}$ | $\epsilon\,\eta_{\mu\nu\rho\sigma}$ | $k^{\mu}$ | $k^2 == k_{\mu}\,k^{\mu}$ | $n^{\mu} == \frac{k^{\mu}}{k}$ |

| Fundamental field | Symmetries | Decomposition in SO(3) irreps | Source |
|---|---|---|---|
| $\omega_{\alpha\beta\chi}$ | Symmetry[3, $\omega^{\bullet 1\bullet 2\bullet 3}$, {$\bullet 1 \to$ -a, $\bullet 2 \to$ -b, $\bullet 3 \to$ -c}, StrongGenSet[{1, 2}, GenSet[-(1,2)]]] | $-\frac{1}{2}\,\eta_{\beta\chi}\,\omega_{1^-}^{\#1}{}_{\alpha} + \frac{1}{2}\,\eta_{\alpha\chi}\,\omega_{1^-}^{\#1}{}_{\beta} + \frac{4}{3}\,\omega_{2^-}^{\#1}{}_{\alpha\beta\chi} + \frac{1}{3}\,\eta_{\beta\chi}\,\omega_{0^+}^{\#1}\,n_{\alpha} + \omega_{1^+}^{\#1}{}_{\beta\chi}\,n_{\alpha} + \omega_{2^+}^{\#1}{}_{\beta\chi}\,n_{\alpha} - \frac{1}{3}\,\eta_{\alpha\chi}\,\omega_{0^+}^{\#1}\,n_{\beta} - \omega_{1^+}^{\#1}{}_{\alpha\chi}\,n_{\beta} - \omega_{2^+}^{\#1}{}_{\alpha\chi}\,n_{\beta} + \omega_{1^+}^{\#2}{}_{\alpha\beta}\,n_{\chi} - \frac{1}{2}\,\omega_{1^-}^{\#1}{}_{\beta}\,n_{\alpha}\,n_{\chi} - \omega_{1^-}^{\#2}{}_{\beta}\,n_{\alpha}\,n_{\chi} + \frac{1}{2}\,\omega_{1^-}^{\#1}{}_{\alpha}\,n_{\beta}\,n_{\chi} + \omega_{1^-}^{\#2}{}_{\alpha}\,n_{\beta}\,n_{\chi} - \frac{1}{6}\,\epsilon\eta_{\alpha\beta\chi\delta}\,\omega_{0^-}^{\#1}\,n^{\delta}$ | $\sigma_{\alpha\beta\chi}$ |

| SO(3) irrep | Symmetries | Expansion in terms of the fundamental field | Source |
|---|---|---|---|
| $\omega_{0^+}^{\#1}$ | Symmetry[0, $\omega_{0^+}^{\#1}$, {}, StrongGenSet[{}, GenSet[]]] | $\omega_{\alpha}{}^{\beta}{}_{\beta}\,n^{\alpha}$ | $\sigma_{0^+}^{\#1}$ |
| $\omega_{0^-}^{\#1}$ | Symmetry[0, $\omega_{0^-}^{\#1}$, {}, StrongGenSet[{}, GenSet[]]] | $-\epsilon\eta_{\alpha\beta\chi\delta}\,\omega^{\beta\chi\delta}\,n^{\alpha}$ | $\sigma_{0^-}^{\#1}$ |
| $\omega_{1^+}^{\#1}{}_{\alpha\beta}$ | Symmetry[2, $\omega_{1^+}^{\#1\bullet 1\bullet 2}$, {$\bullet 1 \to$ -a, $\bullet 2 \to$ -b}, StrongGenSet[{1, 2}, GenSet[-(1,2)]]] | $-\frac{1}{2}\,\omega_{\alpha\chi\beta}\,n^{\chi} + \frac{1}{2}\,\omega_{\beta\chi\alpha}\,n^{\chi} - \frac{1}{2}\,\omega_{\beta\chi\delta}\,n_{\alpha}\,n^{\chi}\,n^{\delta} + \frac{1}{2}\,\omega_{\alpha\chi\delta}\,n_{\beta}\,n^{\chi}\,n^{\delta}$ | $\sigma_{1^+}^{\#1}{}_{\alpha\beta}$ |
| $\omega_{1^+}^{\#2}{}_{\alpha\beta}$ | Symmetry[2, $\omega_{1^+}^{\#2\bullet 1\bullet 2}$, {$\bullet 1 \to$ -a, $\bullet 2 \to$ -b}, StrongGenSet[{1, 2}, GenSet[-(1,2)]]] | $\omega_{\alpha\beta\chi}\,n^{\chi} + \omega_{\beta\chi\delta}\,n_{\alpha}\,n^{\chi}\,n^{\delta} - \omega_{\alpha\chi\delta}\,n_{\beta}\,n^{\chi}\,n^{\delta}$ | $\sigma_{1^+}^{\#2}{}_{\alpha\beta}$ |
| $\omega_{1^-}^{\#1}{}_{\alpha}$ | Symmetry[1, $\omega_{1^-}^{\#1\bullet 1}$, {$\bullet 1 \to$ -a}, StrongGenSet[{}, GenSet[]]] | $-\omega_{\alpha}{}^{\beta}{}_{\beta} + \omega_{\beta}{}^{\chi}{}_{\chi}\,n_{\alpha}\,n^{\beta} + \omega_{\alpha\beta\chi}\,n^{\beta}\,n^{\chi}$ | $\sigma_{1^-}^{\#1}{}_{\alpha}$ |
| $\omega_{1^-}^{\#2}{}_{\alpha}$ | Symmetry[1, $\omega_{1^-}^{\#2\bullet 1}$, {$\bullet 1 \to$ -a}, StrongGenSet[{}, GenSet[]]] | $\omega_{\alpha\beta\chi}\,n^{\beta}\,n^{\chi}$ | $\sigma_{1^-}^{\#2}{}_{\alpha}$ |
| $\omega_{2^+}^{\#1}{}_{\alpha\beta}$ | Symmetry[2, $\omega_{2^+}^{\#1\bullet 1\bullet 2}$, {$\bullet 1 \to$ -a, $\bullet 2 \to$ -b}, StrongGenSet[{1, 2}, GenSet[(1,2)]]] | $-\frac{1}{2}\,\omega_{\alpha\chi\beta}\,n^{\chi} - \frac{1}{2}\,\omega_{\beta\chi\alpha}\,n^{\chi} - \frac{1}{3}\,\eta_{\alpha\beta}\,\omega_{\chi}{}^{\delta}{}_{\delta}\,n^{\chi} + \frac{1}{3}\,\omega_{\chi}{}^{\delta}{}_{\delta}\,n_{\alpha}\,n_{\beta}\,n^{\chi} + \frac{1}{2}\,\omega_{\beta\chi\delta}\,n_{\alpha}\,n^{\chi}\,n^{\delta} + \frac{1}{2}\,\omega_{\alpha\chi\delta}\,n_{\beta}\,n^{\chi}\,n^{\delta}$ | $\sigma_{2^+}^{\#1}{}_{\alpha\beta}$ |
| $\omega_{2^-}^{\#1}{}_{\alpha\beta\chi}$ | Symmetry[3, $\omega_{2^-}^{\#1\bullet 1\bullet 2\bullet 3}$, {$\bullet 1 \to$ -a, $\bullet 2 \to$ -b, $\bullet 3 \to$ -c}, StrongGenSet[{1, 2}, GenSet[-(1,2)]]] | $\frac{1}{2}\,\omega_{\alpha\beta\chi} + \frac{1}{4}\,\omega_{\alpha\chi\beta} - \frac{3}{8}\,\eta_{\beta\chi}\,\omega_{\alpha}{}^{\delta}{}_{\delta} - \frac{1}{4}\,\omega_{\beta\chi\alpha} + \frac{3}{8}\,\eta_{\alpha\chi}\,\omega_{\beta}{}^{\delta}{}_{\delta} - \frac{3}{8}\,\omega_{\beta}{}^{\delta}{}_{\delta}\,n_{\alpha}\,n_{\chi} + \frac{3}{8}\,\omega_{\alpha}{}^{\delta}{}_{\delta}\,n_{\beta}\,n_{\chi} + \frac{1}{4}\,\omega_{\beta\chi\delta}\,n_{\alpha}\,n^{\delta} + \frac{1}{2}\,\omega_{\beta\delta\chi}\,n_{\alpha}\,n^{\delta} + \frac{1}{4}\,\omega_{\chi\delta\beta}\,n_{\alpha}\,n^{\delta} + \frac{3}{8}\,\eta_{\beta\chi}\,\omega_{\delta}{}^{\epsilon}{}_{\epsilon}\,n_{\alpha}\,n^{\delta} - \frac{1}{4}\,\omega_{\alpha\chi\delta}\,n_{\beta}\,n^{\delta} - \frac{1}{2}\,\omega_{\alpha\delta\chi}\,n_{\beta}\,n^{\delta} - \frac{1}{4}\,\omega_{\chi\delta\alpha}\,n_{\beta}\,n^{\delta} - \frac{3}{8}\,\eta_{\alpha\chi}\,\omega_{\delta}{}^{\epsilon}{}_{\epsilon}\,n_{\beta}\,n^{\delta} - \frac{1}{2}\,\omega_{\alpha\beta\delta}\,n_{\chi}\,n^{\delta} - \frac{1}{4}\,\omega_{\alpha\delta\beta}\,n_{\chi}\,n^{\delta} + \frac{1}{4}\,\omega_{\beta\delta\alpha}\,n_{\chi}\,n^{\delta} + \frac{3}{8}\,\eta_{\beta\chi}\,\omega_{\alpha\delta\epsilon}\,n^{\delta}\,n^{\epsilon} - \frac{3}{8}\,\eta_{\alpha\chi}\,\omega_{\beta\delta\epsilon}\,n^{\delta}\,n^{\epsilon} - \frac{3}{8}\,\omega_{\beta\delta\epsilon}\,n_{\alpha}\,n_{\chi}\,n^{\delta}\,n^{\epsilon} + \frac{3}{8}\,\omega_{\alpha\delta\epsilon}\,n_{\beta}\,n_{\chi}\,n^{\delta}\,n^{\epsilon}$ | $\sigma_{2^-}^{\#1}{}_{\alpha\beta\chi}$ |