

# Field kinematics

Momentum	Norm	Frame
$k^\mu$	$k^2 == k_\mu \ k^\mu$	$n^\mu == \frac{k^\mu}{k}$

## Fundamental fields

Fields	Symmetries	SO(3)	Sources
$f_{\alpha\beta}$	StrongGenSet[{ $\{\}$ , GenSet[ $\{\}$ ]]	$\frac{1}{3} \ \eta_{\alpha\beta} \ 0^{+1} f + \frac{1}{1^{+}} f_{\alpha\beta} + \frac{1}{2^{+}} f_{\alpha\beta} + \frac{1}{1^{-}} f_{\beta} \ n_{\alpha} + \frac{1}{1^{-}} f_{\alpha} \ n_{\beta} - \frac{1}{3} \ 0^{+1} f \ n_{\alpha} \ n_{\beta} + 0^{+2} f \ n_{\alpha} \ n_{\beta}$	$\tau_{\alpha\beta}$

## SO(3) irreps

SO(3)	Symmetries	Expansion	Sources
$0^{+1} f$	StrongGenSet[{ $\{\}$ , GenSet[ $\{\}$ ]]	$f^{\alpha}_{\alpha} - f^{\alpha\beta} \ n_{\alpha} \ n_{\beta}$	$0^{+1} \ \tau$
$0^{+2} f$	StrongGenSet[{ $\{\}$ , GenSet[ $\{\}$ ]]	$f^{\alpha\beta} \ n_{\alpha} \ n_{\beta}$	$0^{+2} \ \tau$
$1^{+1} f_{\alpha\beta}$	StrongGenSet[{ $\{1, 2\}$ , GenSet[-(1,2)]]	$\frac{f_{\alpha\beta}}{2} - \frac{f_{\beta\alpha}}{2} + \frac{1}{2} \ f_{\beta}^{\ X} \ n_{\alpha} \ n_{\chi} - \frac{1}{2} \ f^{\ X}_{\beta} \ n_{\alpha} \ n_{\chi} - \frac{1}{2} \ f_{\alpha}^{\ X} \ n_{\beta} \ n_{\chi} + \frac{1}{2} \ f^{\ X}_{\alpha} \ n_{\beta} \ n_{\chi}$	$1^{+1} \ \tau_{\alpha\beta}$
$1^{+1} f_{\alpha}$	StrongGenSet[{ $\{\}$ , GenSet[ $\{\}$ ]]	$f^{\beta}_{\alpha} \ n_{\beta} - f^{\beta\chi} \ n_{\alpha} \ n_{\beta} \ n_{\chi}$	$1^{+1} \ \tau_{\alpha}$
$1^{+2} f_{\alpha}$	StrongGenSet[{ $\{\}$ , GenSet[ $\{\}$ ]]	$f_{\alpha}^{\ \beta} \ n_{\beta} - f^{\beta\chi} \ n_{\alpha} \ n_{\beta} \ n_{\chi}$	$1^{+2} \ \tau_{\alpha}$
$2^{+1} f_{\alpha\beta}$	StrongGenSet[{ $\{1, 2\}$ , GenSet[(1,2)]]	$\frac{f_{\alpha\beta}}{2} + \frac{f_{\beta\alpha}}{2} - \frac{1}{3} \ \eta_{\alpha\beta} \ f^{\ X}_{\chi} + \frac{1}{3} \ f^{\ X}_{\chi} \ n_{\alpha} \ n_{\beta} - \frac{1}{2} \ f_{\beta}^{\ X} \ n_{\alpha} \ n_{\chi} - \frac{1}{2} \ f^{\ X}_{\beta} \ n_{\alpha} \ n_{\chi} - \frac{1}{2} \ f_{\alpha}^{\ X} \ n_{\beta} \ n_{\chi} - \frac{1}{2} \ f^{\ X}_{\alpha} \ n_{\beta} \ n_{\chi} + \frac{1}{3} \ \eta_{\alpha\beta} \ f^{\chi\delta} \ n_{\chi} \ n_{\delta} + \frac{2}{3} \ f^{\chi\delta} \ n_{\alpha} \ n_{\beta} \ n_{\chi} \ n_{\delta}$	$2^{+1} \ \tau_{\alpha\beta}$