ρ meson in the medium :

$$D^{\rho}_{\mu\nu}(q) = -i \int d^4x \, e^{iqx} \theta(x^0) \ll [\vec{\rho}_\mu(x), \vec{\rho}_\nu(0)] \gg$$

tensor structure: (Lorentz invariance broken)

$$D^{\rho}_{\mu\nu}(q) = D^L_\rho(\omega, \vec{q}) P^L_{\mu\nu} + D^T_\rho(\omega, \vec{q}) P^T_{\mu\nu}$$

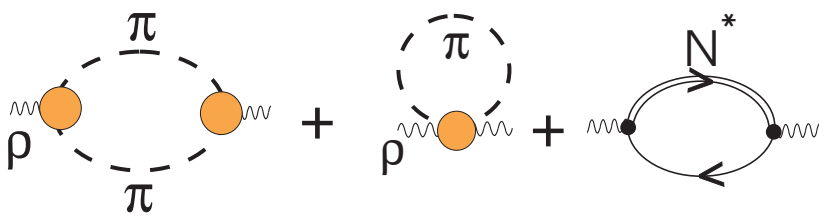
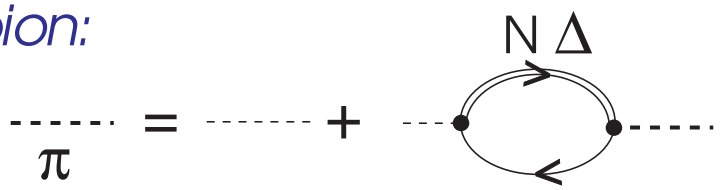
longitudinal transverse

$P^{L,T}_{\mu\nu}$: long (trans) projectors

in-medium selfenergy:

- change of the pion dispersion relation
- direct coupling to N^*-Resonances

rho meson:



pion: