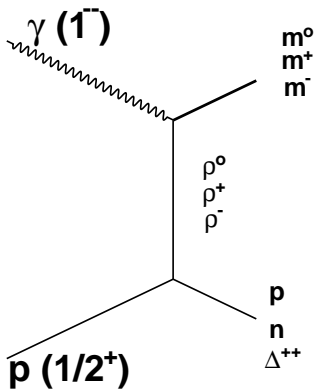


The Home Work Questions

1. Is there ρ exchange with C+ final state?
2. Where are the h_1 particles?

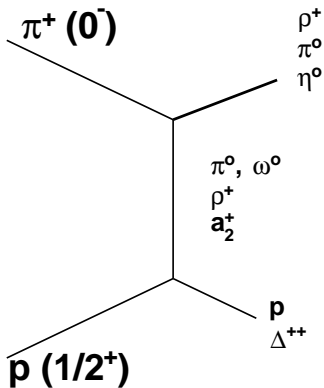
General ρ - exchange



- ρ exchange
- $m_\rho \gg m_\pi$
- t is a measure of impact parameter...
- Suppressed at low t w.r.t π (long range)

General ρ - exchange

google: “evidence of rho exchange in meson production”
find: Nucl.Phys.B11(1969)339-342

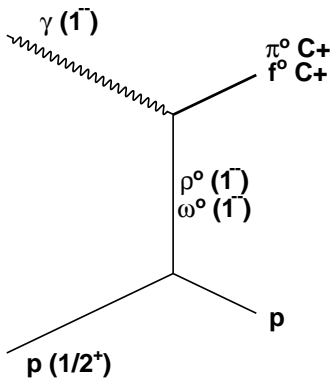


- Nucl.Phys.B22(1970)45-65
- $p\pi^+, \rho\rho^+, \Delta^{++}\pi^0, \Delta^{++}\eta^0$
- ρ exchange $\Delta^{++}\pi^0$
- a_2 exchange $\Delta^{++}\eta^0$
- **NEED TO LOOK TO $d\sigma/dt!$
AND SDMEs(t)**
- Dip at $t \approx -0.5 \text{ GeV}^2$

ρ - exchange in Photo production with $C+$

Phys.Rev.D4(1971)1937 $\pi^0(0^{-+})$

Phys.Rev.D102(2009)102001 $f^0(980)(0^{++})$



- π , \mathbf{P} forbidden
- ρ dominant
- even at low t
- Dip at $t \approx -0.5 \text{ GeV}^2$!
- **Polarization!** Separate Natural and unnatural parity exchange

What about h_1 mesons?

$h_1(1170)0^-(1^{+-})$

Mass: 1170 ± 20

Width: 360 ± 40

ANDO 92

$\pi^- p \rightarrow \pi^+ \pi^- \pi^0 n$

DANKOVY 81

$\pi^- p \rightarrow 3\pi n$

$h_1(1380)?^-(1^{+-})$

Mass: 1380 ± 19

Width: 91 ± 30

ABELE 97

$\bar{p} p \rightarrow K_L^0 K_S^0 \pi^0 \pi^0 n$

ASTON 88

$K^- p \rightarrow K_S^0 K^\pm \pi^\mp \Lambda$

$h_1(1595)0^-(1^{+-})$

Mass: $1595 \pm 15_{-60}^{+10}$

Width: $384 \pm 60_{-100}^{+70}$

EUGENIO 01

$\pi^- p \rightarrow \omega \eta n$