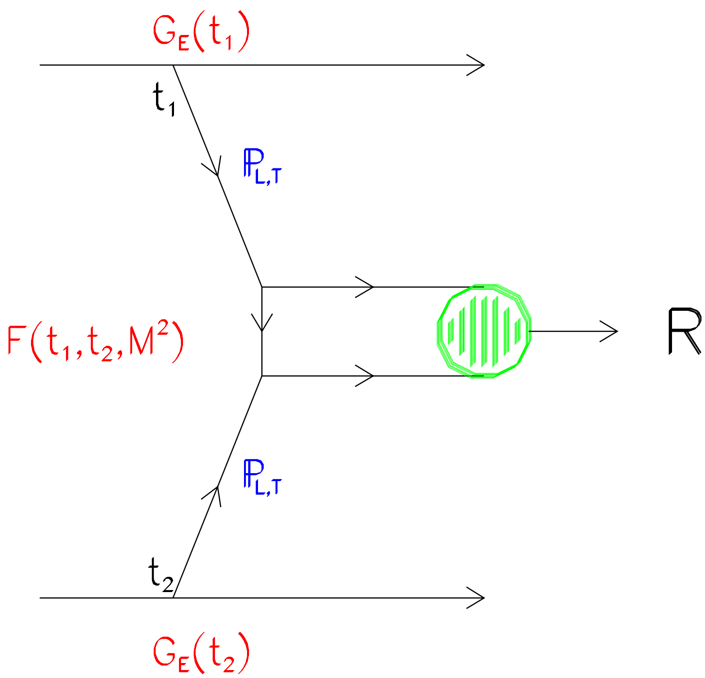
A model to describe double Pomeron exchange

- for Pomerons acting as non-conserved vector currents



$$\frac{d\sigma}{dt_1\, dt_2\, d\phi'} \sim {G_E^p}^2(t_1){G_E^p}^2(t_2)F^2(t_1,t_2,M^2)A(t_1,t_2,\phi')$$

where $G_E(t)$ is the proton- P form factor which is described using the Donnachie Landshoff formalism

$A(t_1,t_2,\phi')$ is the prediction for the interaction of two Pomerons acting like non-conserved vector currents

and $F^2(t_1,t_2,M^2)$ is the P- P-Meson form factor which for collisions of two Pomerons with a given polarisation (T or L) is parameterized as:

	TT	LL	TL
$F^2(t_1,t_2,M^2)$	$e^{-b_T(t_1+t_2)}$	$e^{-b_L(t_1+t_2)}$	$e^{-(b_T t_1+b_L t_2)}$

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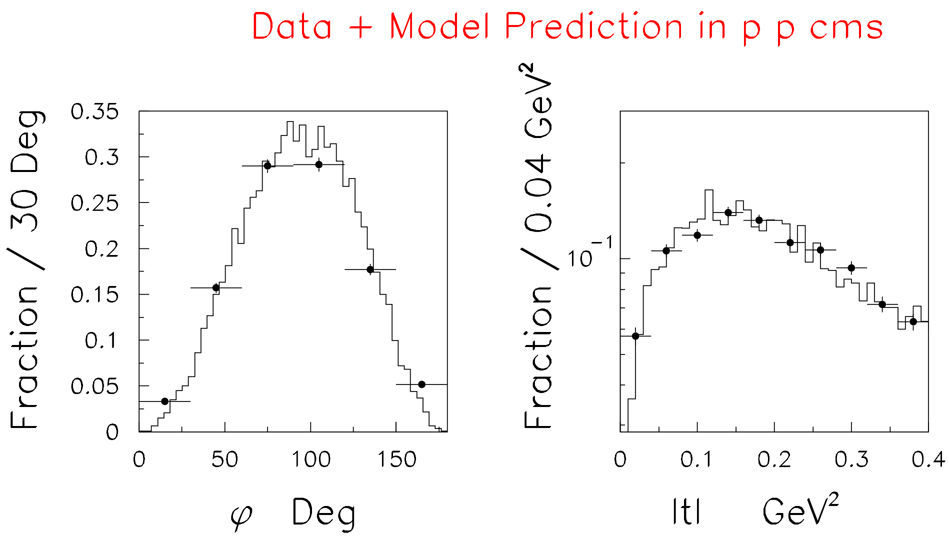
$J^{PC} = 0^{-+}$ - the η'

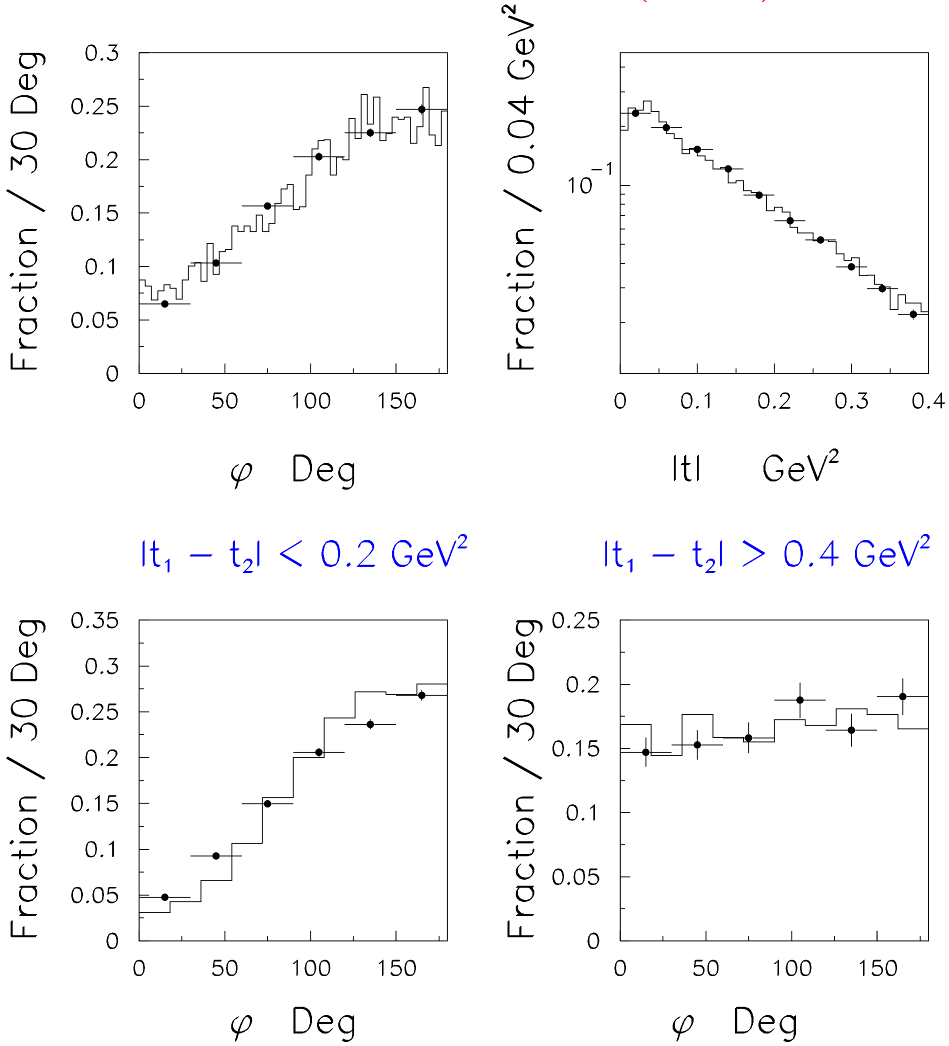


$$A(t_1, t_2, \phi') = t_1 t_2 \sin^2(\phi')$$

$$F^2(t_1, t_2, M^2) = e^{-b_T(t_1+t_2)}$$

data requires $b_T = 0.5\ GeV^{-2}$.

$J^{PC} = 1^{++}$ - the $f_1(1285)$



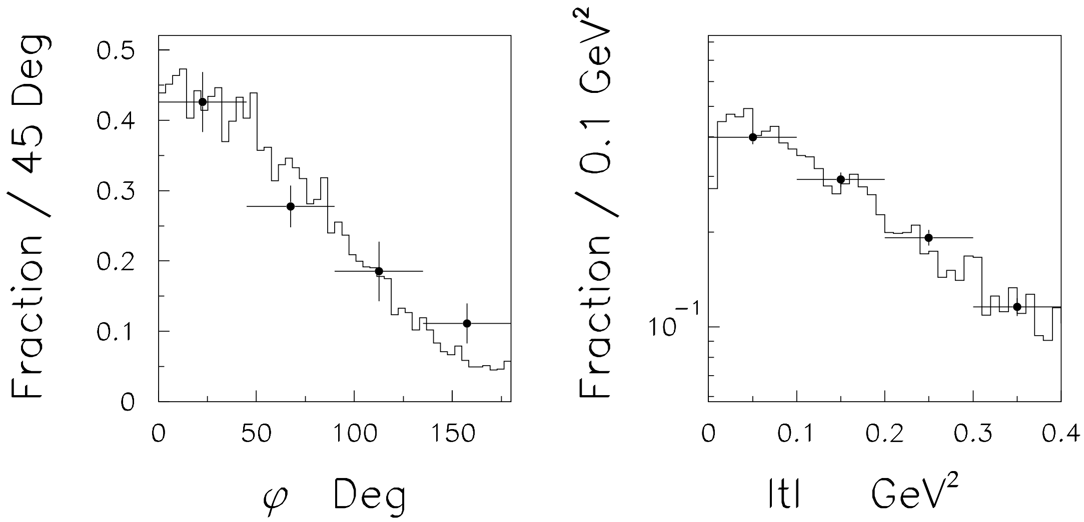
$$A(t_1, t_2, \phi') = (\sqrt{t_1} - \sqrt{t_2})^2 + 4\sqrt{t_1 t_2}\sin^2(\phi'/2)$$

$$F^2(t_1, t_2, M^2) = e^{-(b_T t_i + B_L t_j)}$$

$b_T = 0.5\ GeV^{-2}$ from $J^{PC} = 0^{-+}$, and $b_L = 3\ GeV^{-2}$ from the $J^{PC} = 1^{++}$.

Then we have a parameter free prediction for the ϕ dependences as a function of $|t_1 - t_2|$.

$J^{PC} = 2^{-+}$ - the $\eta_2(1645)$



Helicity 1 is found to dominate experimentally

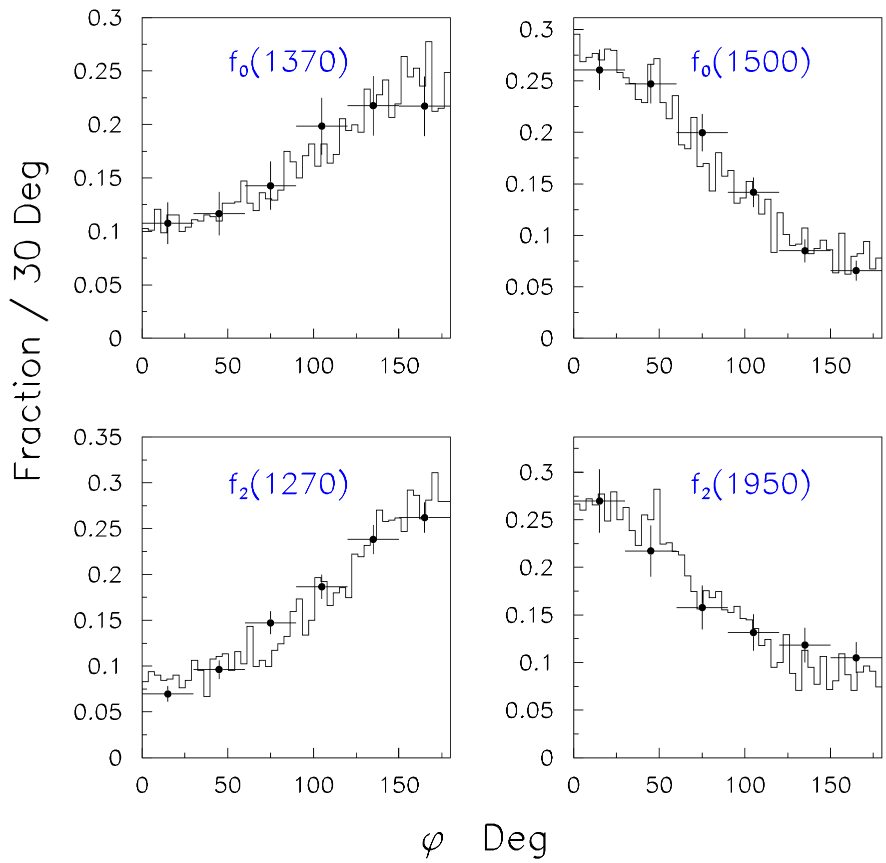
$$F^2(t_1, t_2, M^2) = e^{-(b_T t_i + B_L t_j)}$$

with b_T and b_L fixed from before and

$$A(t_1, t_2, \phi') = (\sqrt{t_1} - \sqrt{t_2})^2 + 4\sqrt{t_1 t_2}\cos^2(\phi'/2)$$

We have a parameter free prediction for ϕ and $|t|$.

The scalar and tensor sector



Both TT and LL exchanges are possible. Then $F^2(t_1, t_2, M^2)A(t_1, t_2, \phi')$ is

$$t_1 t_2 [e^{-b_L(t_1+t_2)/2} + \frac{\sqrt{t_1 t_2}}{\mu^2} e^{-b_T(t_1+t_2)/2} \cos(\phi')]^2$$

b_T and b_L are fixed and μ^2 is the only free variable

	$f_0(1370)$	$f_0(1500)$	$f_2(1270)$	$f_2(1950)$
μ^2/GeV^2	-0.5	$+0.7$	-0.4	$+0.7$

Does the sign or the size of μ^2 differentiate between Glueballs and $q\bar{q}$ states