



UNIVERSITY OF
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MK-model

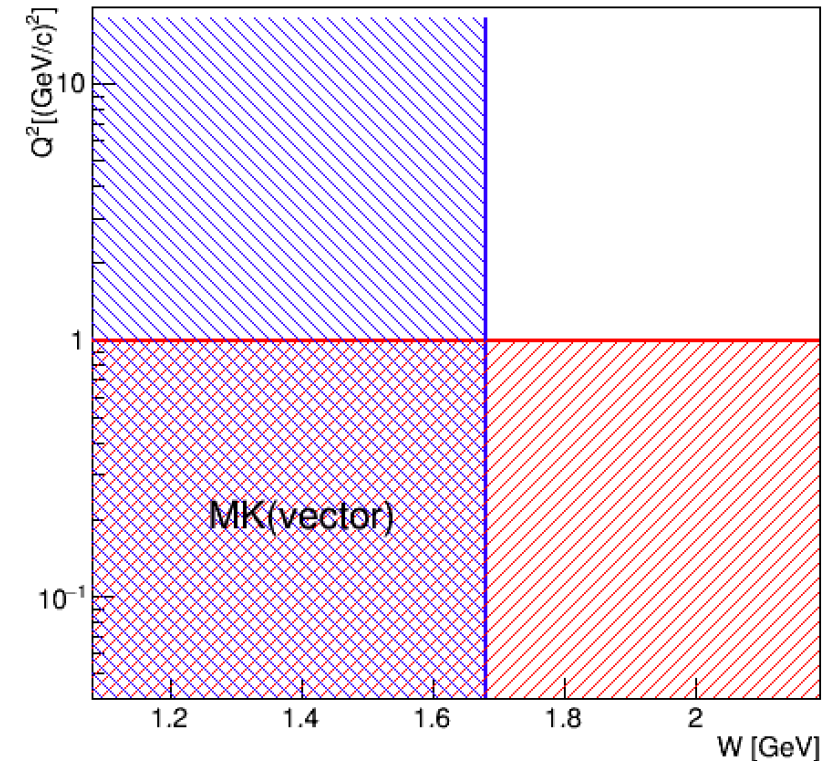
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Fermilab Joint meeting between theorists and Experimentalists

Feb. 11, 2021

MK model

- MK model describes single pion productions in the neutrino interactions via resonance decays (Rein-Sehgal \rightarrow Rarita-Schwinger) and nonresonant interactions (Valencia).
- I used electron (pion) scattering data to constrain vector (axial) currents.
- J-Lab data on hydrogen target ($ep \rightarrow ep + \pi^0$, $ep \rightarrow en + \pi^+$) with $1.1 < W < 1.68$ GeV, and different $Q^2 < 1$ GeV². Data for higher W is with higher Q^2 .
- SAID (pion elastic scattering) data for $Q^2=0$ and $W < 2$. GeV. There are data for higher W.



What shall we do in the transition region?

- SPP models are usually valid inside the Delta \rightarrow resonance regions (non-resonant model is valid inside the Delta region).
- Outside of the resonance region, we need to use quark–gluon description, which is theoretically justified in the DIS region.
- At higher Q^2 and in the **perturbative domain**, QCD calculations provide reliable predictions about **asymptotic behaviour** of helicity amplitudes and form factors (both resonances and nonresonant background). Thanks to the quark-hadron **duality**!
- At high W , the propagator of the t-channel meson-exchange diagrams must be replaced with the corresponding **Regge propagators**.

