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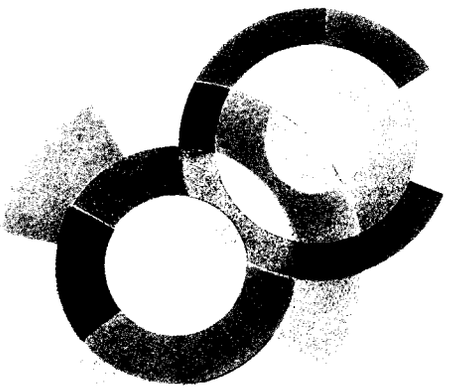

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Contributions to the Baryons '95 Conference

DAPNIA

B. Saghaï et al.

Form Factors of the Hadrons through Strangeness Electroproduction Processes

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A formalism based on an isobaric approach, *via* Feynman diagrammatic techniques, including the nucleonic (spin $\leq 5/2$), hyperonic (spin 1/2) and the kaonic resonances is developed. Using this formalism, a thorough investigation of *all* the electromagnetic strangeness processes, for which experimental results are available, namely:

$\gamma\, p \rightarrow K^+\, \Lambda,\ K^+\, \Sigma^0,\ K^0\, \Sigma^+;\ E_\gamma^{lab} \leq 2.1$ GeV,

$e\, p \rightarrow e'\, K^+\, \Lambda,\ e'\, K^+\, \Sigma^0$,

$K^-\, p \rightarrow \gamma\, \Lambda,\ \gamma\, \Sigma^\circ$ (branching ratios with stopped kaons),

is performed and satisfactory agreement with the data is obtained.

The reaction mechanism includes, besides the extended Born terms, the following exchanged particles:

s-channel: $P_{11}(1440), P_{13}(1720), D_{15}(1675)$,

u-channel: $\Lambda(1405), \Lambda(1670), \Lambda(1810), \Sigma(1660)$,

t-channel: $K^*(892), K1(1270)$.

In addition, the values of the two main coupling constants $g_{K\Lambda N}$ and $g_{K\Sigma N}$, are in agreement with the broken SU(3)-symmetry predictions.

In this contribution, we will focus on the sensitivity of the reactions $ep \rightarrow e'K^+\Lambda$ and $ep \rightarrow e'K^+\Sigma^0$, in the few GeV region, to the hadronic form factors. Given the planned experiments at CEBAF, a detailed study of the following quantities is performed:

$$d\sigma_{UL} \equiv d\sigma/d\Omega_K = \sigma_U + \varepsilon_L\, \sigma_L,$$

and

$$R \equiv \sigma_L/\sigma_U,$$

with σ_U and σ_L the differential cross sections for an unpolarized incident photon beam, and a longitudinally polarized virtual photon, respectively; ε_L is the longitudinal polarization parameter.

In this study, we use several recent form factors for the baryons, the kaon and the kaonic resonances taken from the literature as well as from more sophisticated QCD-based calculations which have become available very recently.

We will present our results showing that sizeable effects arise especially from the choice of the kaonic form factors.