Covariant Electromagnetic and Axial Nucleon Form Factors in Point Form

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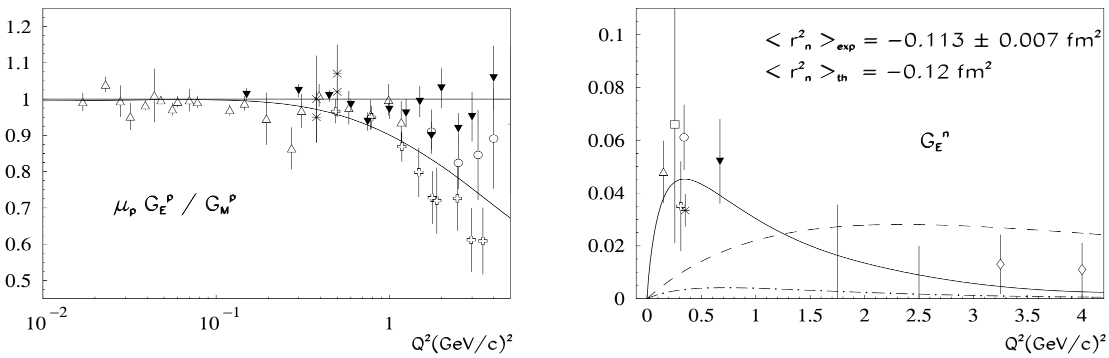

Figure 1: Left: the ratio of the proton electric to magnetic form factor. Solid line as predicted by the model. Right: the neutron electric form factor. Solid, dashed and dot-dashed lines as predicted by the model, the nonrelativistic approximation and the model with the confinement interaction only, respectively.

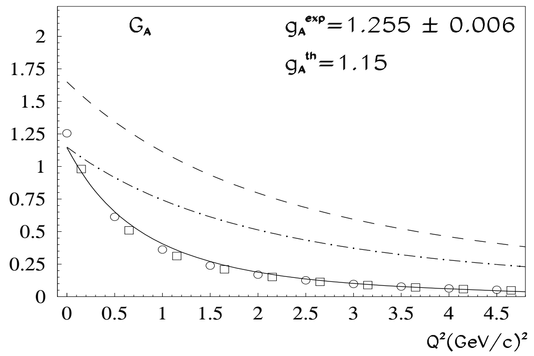

Figure 2: The nucleon axial form factor. Solid line for the full calculation, dashed line for the nonrelativistic result and dot-dashed line for the result without boosts. Experimental data are plotted assuming the dipole form.

Results are presented for the nucleon as a progress report of a more comprehensive programme dealing with electroweak properties of baryons studied within the CQM discussed in Ref. [1]. In order to describe dynamic properties in a covariant way we adopt the point-form approach [2].
The results, obtained without any adjustable parameter nor quark form factor [3,4], are shown in Figs. 1 and 2. They show the crucial importance of the relativistic boost required by the covariant treatment.

References

[1] L.Ya. Glozman *et al.*, Phys. Rev. D**58**, 094030 (1998).
[2] W.H. Klink, Phys. Rev. C**58**, 3587 (1998).
[3] R.F. Wagenbrunn *et al.*, `nucl-th/0010048`, to appear in Phys. Lett. B.
[4] L.Ya. Glozman *et al.*, `nucl-th/0105028`.