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## Form factors and structure functions of heavy mesons and baryons

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We present preliminary results for form factors and structure functions of some of spin-0, spin-1/2 and spin-1 heavy quarkonia and triply-heavy baryons in heavy flavor QCD. Using renormalization group procedure for effective particles (RGPEP) and gluon mass ansatz, approximate Hamiltonians for heavy quarkonia and triply-heavy baryons in QCD were found [1,2]. The approximate eigenfunctions of these Hamiltonians are used to obtain the results for form factors and structure functions. Charge radii that are calculated from the form factors are in the ballpark of expectations based on other theoretical results. The results for radii are in a surprisingly good agreement with lattice QCD results in cases where comparison is possible. The crudeness of approximations of the wave functions, however, presents a problem for calculations of magnetic properties of hadrons and for relativistic covariance of scattering amplitudes. To estimate corrections necessary to obtain reliable results for magnetic moments of spin-1/2 and spin-1 hadrons, we construct corrections to the wave functions using free quark spinors. These corrections approximately restore rotational covariance of the scattering amplitudes and allow us to give estimates of the magnetic moments. Magnetic moments of vector charmonia and bottomonia are in agreement with other theoretical results. Magnetic moments of  $B_c^*$  mesons and spin-1/2 ground states of  $bbc$  and  $ccb$  baryons are considerably larger than moments reported in the literature.

The hadron structure functions are computed in a simplified way, neglecting the huge difference between the scale of quark binding and the scale of the virtual photon in deep inelastic scattering (formally infinite). The calculations show interesting features, such as dependence of the structure function shape on the wave function nodes. However, these calculations can be considered merely a demonstration of potential utility of the method, because the transformation that connects effective particles at two different RGPEP scales, that of DIS and that of bound-state formation, is approximated by identity.

[1] Głazek, Gómez-Rocha, More, Serafin, Phys. Lett. B 773, 172 (2017)

[2] Serafin, Gómez-Rocha, More, Głazek, Eur. Phys. J. C 78, 964 (2018)

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