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Wave functions and EM form factors via Bethe-Salpeter-Nakanishi approach

New results on calculation of the Bethe-Salpeter (BS) amplitude in the Minkowski space, proceeding from the Euclidean BS amplitude, will be presented. The instability of the continuation Euclidean \rightarrow Minkowski amplitude is strongly suppressed (though, not completely) by using the Nakanishi integral representation and Tikhonov regularization. The residual uncertainty almost does not make any influence on the observables (electromagnetic form factors).

For the analytically known interaction kernel we derive an integral equation for the Nakanishi function. The latter is found when, in addition to ladder, the cross graphs are incorporated. Then, with this solution, the electromagnetic form factors are calculated beyond the impulse approximation, taking into account also the cross graphs in the electromagnetic vertex.

The three-body BS equation with the contact interaction is solved for the first time. We compare the BS results with ones found previously in the framework of the light front dynamics.

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