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Symmetry-preserving contact interaction model for heavy-light mesons

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We have calculated properties of pseudoscalar mesons using contact interaction in the Bethe-Salpeter equation. Contrary to the traditional treatment of the divergent amplitudes, we have implemented a novel approach in order to avoid the standard steps to evaluate divergent integrals which leads to symmetry violation. The basic idea of the novel approach is simples and consists in to assume a Poincar\'e invariant regularization in the amplitudes and then to perform subtractions on the propagators in order to obtain in general three kinds of terms at the end of the manipulations: quadratic and logarithmically divergent integrals, symmetry violating terms and a finite integral. Identifying the symmetries offending terms and removing them from the amplitudes using a consistent regularization scheme that does vanish the offending terms, we obtain amplitudes free of ambiguities and symmetry preserving. We have investigated the masses and electroweak decay constant of pseudoscalar mesons (π^0, K^0, D^0) finding good results.

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