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Production of bound states of quarks and leptons in rare Higgs boson decays

The rare decay process of the Higgs boson into a pair of J/Ψ and ϒ particles is studied within the perturbative Standard Model and the relativistic quark model. We study also the processes of single and paired production of lepton bound states (positronium, dimuonium, ditauonium) within the framework of the relativistic approach we are developing [1-5]. The relativistic corrections connected with the relative motion of heavy quarks and leptons are calculated in the production amplitude and the wave functions of the bound states. Numerical values of the decay widths of the Higgs boson are obtained, which can be used for comparison with future experimental data.

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