MainPage
About College
Files
Researches
Courses
Favorite Links
Our Contacts

Research Details :

Research Title : *Heavy-quark spin symmetry and heavy mesons*
التماثل المغربي للكوراك الثقيل و الميزونات الثقيلة

Descriptipn : Dirac Hamiltonian to order u2/c2 has been used to study the mass spectrW11 of q Q boW1d system. We have calculated the energy levels for 1 sand 1 p states by varionial method using Gaussian wave functions. By taking two models into consideration we have obtained mass difference of P-wave 0, Os Band Bs mesons .The agreement between our predictions and the experimental values is good (within 5-10 Mev) . Also we have predicated m .= 5.437 Gev by using the experimental value In Bs =5.375 Gev Masses for these mesons have been calculated. We found that the classes of m and in D are in agreement with their experimental values °1 1 in the two models. But the predictions for the masses In .and In Dare 0, 0 quite different. Our results for the mass m D are not very different from 5, the experimental values. Therefore the existing experimental data do not distinguish between these two models. Finally we have evaluated El decay rates for p-wave Os and B mesons. Also we have evaluated them for D mesons with and without the recoil correction in the non-relativistic quark model. We should note that no experimental data are available on these decay rates. So U1at U1ese predictions can not be tested at present

Research Type : Master

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Supervisor : د. محمد رياض عرفه

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