Abstract Submitted
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Binding Mechanism of Exotic Heavy Quark Systems[1] SADHANA SURESH, PETER SCHWEITZER, Univ of Connecticut - Storrs, SCHWEITZER GROUP TEAM — This project seeks to shed light on how charmonium states can bind with the nucleon. The results of this calculation will be applied to the new pentaquark states which have been observed recently by LHCb at CERN. These new states, P_c(4380) and P_c(4450), are observed to decay in J/Psi and the proton and can be interpreted as pentaquark states with hidden charm. The P_c(4450) state can be described as a bound state of a nucleon and $\Psi(2S)$. The binding mechanism, given in terms of the chromoelectric polarizability of charmonium and the densities of the nucleon energy-momentum tensor, predicts bound states with different spins whose masses are degenerate in the heavy quark limit. The goal of this research is to determine the mass splittings of the different spin states. The result will be of particular interest for experiments at Jefferson Lab, where an independent confirmation of the new pentaquark states and a test of the theoretical predictions could be possible.

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