

Seminarium Zakładu Fizyki Teoretycznej

Departament Badań Podstawowych
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pawilon NCBJ, sala 22, Hoża 69

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"NARROW NUCLEON- $\psi(2S)$ BOUND STATE AND LHCB PENTAQUARKS"

ABSTRACT: We interpret the newly discovered pentaquark $P_c(4450)$ as a bound state of charmonium $\psi(2S)$ and the nucleon. The binding potential is due to charmonium-nucleon interaction that in the heavy quark approximation is proportional to the product of the charmonium chromoelectric polarizability and the nucleon energy-momentum distribution. We use the large N_c expansion to estimate the quarkonium polarizability and calculate the nucleon properties in the framework of the mean-field picture of light baryons. Two almost degenerate states $JP=(1/2)^-$ and $JP=(3/2)^-$ are predicted at the position of the $P_c(4450)$ pentaquark. We find that the nucleon- $\psi(2S)$ bound state has a naturally narrow width in the range of tens of MeV. The unitary multiplet partners of the $P_c(4450)$ pentaquark and the generalization to bb^- -nucleon pentaquark bound states are discussed.

Serdecznie zapraszamy,

M. Kowal, W. Piechocki, L. Roszkowski, J. Skalski, L. Szymanowski