

Pentaquark searches at CMS

Abstract

Recently there has been a revival of interest in searches for pentaquark states triggered by the experimental evidence for hidden-charm pentaquark states provided by LHCb. The LHCb collaboration reported the observation of two pentaquark-like resonances $P_c(4380)$ and $P_c(4450)$ with the decay mode $J/\psi p$ in the process $\Lambda_b^- \rightarrow J/\psi K^- p$ using an amplitude analysis of the three-body decay. The decay mode $P_c^- \rightarrow J/\psi p$ indicates that the minimal quark content is $uudc\bar{c}$. Later, the P_c states were confirmed reanalyzing with a model-independent method, yet no other experiment has confirmed these states.

CMS has the potentialities to look within its data Run1 data and Run2 data for the presence of such states and to search for new P_{sc} pentaquarks. An overview and perspectives for the search of the LHCb pentaquark and other pentaquark searches at CMS are given.

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