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Recent Results on Pentaquark Searches from STAR

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We have examined the p+K$^+$ and $\overline{p}$+K$^-$ invariant mass distribution and observe a peak structure with approximately 4-5 sigma statistical significance in d+Au collisions at $\sqrt{s_{NN}}$ 200 GeV and Au+Au collisions at 62.4 GeV. The apparent mass of the observed peak is at 1530 MeV/c^2. Its width is consistent with detector resolution. The nature of the peak is under active investigation. If confirmed as a particle, this state would be manifestly exotic with uuud-$\overline{s}$ quark structure. The observed yield is estimated to be very small. No signal above combinatoric background was observed in STAR p+p and Au+Au collisions at 200 GeV from RUN II. New analysis results from larger data samples of Run IV Au+Au 200 GeV and Run V Cu+Cu 62.4 GeV will be reported and the status of such pentaquark searches in general will be discussed.

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