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RHIC Au operation in Run24

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The Relativistic Heavy Ion Collider (RHIC) Run 24 was 27 weeks, operating with collisions at the STAR and sPHENIX detectors. The secondary running mode was gold at 100 GeV/u, where there was 3 weeks of operation. The goals of this run were to: reach an intensity of 1.8×10^9 ions/bunch and fully commission the 56 MHz cavity, ensure sPHENIX systems are ready for Run25, and deliver $1-2 \times 10^9$ minimum bias events for STAR. Beam was delayed 1 week due to two simultaneous failures of essential kicker systems: an AGS extraction bump power supply, and the yellow RHIC abort kicker. Elevated backgrounds at sPHENIX's MAPS-based VerTeX (MVTeX) detector required extensive studies and diagnostics. With a combination of local steering at sPHENIX and a large amplitude bump in the sector 10 and 12 arcs, the background levels with 12 bunches were reduced by a factor of 18. STAR was able to collect over 1.5×10^9 minimum bias events and the 56 MHz cavity was operated near its full voltage at 700 kV with 1.3×10^9 ions/bunch. This paper provides a summary of the run and details of the background studies.

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