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Heavy Flavor Prospects at sPHENIX

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In 2023, the sPHENIX experiment will begin collecting data which will include the largest recorded sample of b-hadron decays from Heavy Ion collisions at RHIC. This sample will allow for precision charm and beauty studies, part in thanks to the excellent vertexing of the MVTX detector, the timing of the INTT, and precision of the TPC along with the calorimetry system. The sPHENIX collaboration has adapted and developed several tools to complement the detector system and we have undertaken realistic data simulations to understand and refine these tools. These simulations have demonstrated that the collaboration can run automated heavy flavor reconstruction at the offline stage, storing heavy flavor candidates in containers which will allow for rapid and consistent analyses when data taking commences. The collaboration is also developing AI-assisted smart firmware, capable of heavy flavor selections during online data-taking which will improve the signal-to-background ratio of heavy flavor events.

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