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Online monitoring, calibration and reconstruction in the PHENIX experiment

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The PHENIX experiment took $2 \, 10\hat{}9$ *CuCu events and more than* $7 10\hat{}9$ pp events during Run5 of RHIC. The total stored raw data volume was close to 500 TB.

Since our DAQ bandwidth allowed us to store all events selected by the low level triggers, we did not filter events with an online processor farm which we refer to as level 2 trigger. Instead we ran the level 2 triggers offline in the PHENIX counting house on a local Linux cluster to select events for a priority reconstruction. These events were transferred to an offsite computing facility for fast reconstruction and analysis - which also provided important fast feedback in terms of achievable physics goals. In addition a subset of the minimum bias data was reconstructed immediately in the PHENIX counting house for other physics analysis and estimation of the level 2 trigger bias.

This approach requires a fast availability of the calibrations which are necessary for the reconstruction. These calibrations are performed in parallel to the level 2 filtering effort under a common framework which provides access to events, database connectivity and keeps track of successes and failures. The resulting calibration constants are stored on a run by run basis in a PostgreSQL data base which is distributed to the offsite computing facilities.

We will present the experiences of the PHENIX online computing for Run5 and the future developments and improvements for the upcoming Runs.

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