The PHENIX Timing System

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Abstract

The timing system for the PHENIX data acquisition system is described. PHENIX front-end digitizers and trigger electronics are clocked using a harmonic of the RHIC RF frequency. The PHENIX timing system is designed to transmit this RF clock harmonic along with the fast control and timing signals to the front end electronics through a fiber optic serial link running at 900Mhz. Keeping the clock jitter under control proved to be the leading technological challenge for this system which was resolved through the implementation of frequency tracking phase lock loops along with high speed serial fan outs. Control and monitoring software was also developed for this system. Experience with the timing stability and reliability of the system during the RHIC 2k run will be described.