

Abstract Submitted
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Designing and Testing a Database for the Qweak Measurement

EDWARD HOLCOMB, DAMON SPAYDE¹, TIM POTE, Hendrix College — The aim of the Qweak experiment is to make the most precise determination to date, aside from measurements at the Z-pole, of the Weinberg angle via a measurement of the proton's weak charge. The weak charge determines a particle's interaction with Z-type bosons. According to the Standard Model the value of the angle depends on the momentum of the exchanged Z boson and is well-determined. Deviations from the Standard Model would indicate new physics. During Qweak, bundles of longitudinally polarized electrons will be scattered from a proton target. Elastically scattered electrons will be detected in one of eight quartz bars via the emitted Cerenkov radiation. Periodically the helicity of these electrons will be reversed. The difference in the scattering rates of these two helicity states creates an asymmetry; the Weinberg angle can be calculated from this. Our role in the collaboration was the design, creation, and implementation of a database for the Qweak experiment. The purpose of this database is to store pertinent information, such as detector asymmetries and monitor calibrations, for later access. In my talk I plan to discuss the database design and the results of various tests.

¹Supervising Professor

Edward Holcomb
Hendrix College

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