Abstract #118
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A Measurement of $R_b = \Gamma_{Z^0 \to b\bar{b}} / \Gamma_{Z^0 \to q\bar{q}}$ using a Vertex Mass Tag

The SLD Collaboration

We report a new measurement of $R_b = \Gamma_{Z^o \to b\bar{b}} / \Gamma_{Z^0 \to hadrons}$ using a double tag technique where the b selection is based on topological reconstruction of the mass of the B-decay vertex. The measurement was performed using a sample of 50k hadronic Z^0 events collected with the SLD at the SLC during the 1996 run with the improved SLD CCD pixel vertex detector. The method utilizes the 3-D vertexing abilities of the SLD and the small stable SLC beams to obtain a high b tagging efficiency of 45% for a purity of 98%. The high purity reduces the systematic uncertainty introduced by charm contamination and correlations with R_c. Combined with our 1993-95 published measurement we obtain $\Delta R_b / R_b = \pm 1.3\%$