Contribution ID: **11** Type: **not specified**

Observation of Single Top Quark Production with the D0 detector

Tuesday 18 August 2009 14:00 (1 minute)

Please give a brief summary of your poster

We report the first observation of the electroweak production of single top quarks in ppbar collisions at sqrt(s) = 1.96
TeV based on 2.3 fb-1 of data collected by the D0 detector at the Fermilab Tevatron Collider. Using events containing an isolated electron or muon and missing transverse energy, together with jets originating from the fragmentation of b quarks, we measure a cross section of sigma(ppbar -> tb + X, tqb + X) = 3.94 +- 0.88 pb. The probability to measure a cross section at this value or higher in the absence of signal is 2.5 x 10-7, corresponding to a
5.0 standard deviation significance for the observation. The measurement of the single top production cross section is used to derive a direct measurement of the CKM matrix element |Vtb|.

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Session Classification: Poster Session

Track Classification: Poster Session