

Abstract Submitted  
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**Measurement of the Properties of  $\Sigma_b^{(*)\pm}$  with the CDF II Experiment** PRABHAKAR PALNI, University of New Mexico, CDF II COLLABORATION — I will present a measurement of the masses and natural widths of the four bottom baryon resonance states  $\Sigma_b^+$ ,  $\Sigma_b^{*+}$  and  $\Sigma_b^-$ ,  $\Sigma_b^{*-}$  reconstructed in the  $\Lambda_b^0\pi^+$  and  $\Lambda_b^0\pi^-$  decay modes, respectively. This analysis is based upon the data taken with proton anti-proton collisions at 1.96 TeV recorded by the CDF II detector for a total integrated luminosity of  $6 \text{ fb}^{-1}$ . A heavy baryon with two light quarks and a single heavy quark can be described as the helium atom of QCD. The heavy quark in the baryon may be used as a probe of confinement which will allow us to study non-perturbative QCD in a new regime. The natural widths of the states  $\Sigma_b^\pm$  and  $\Sigma_b^{*\pm}$  have been measured for the first time. The signal shape is modeled with a non-relativistic P-Wave Modified Breit- Wigner function.

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