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Exclusive semileptonic B decays to high-mass charm hadrons

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The experimental knowledge of semileptonic B decays to a D or D*meson with one or more pions is limited. These limitations are relevant to two experimental puzzles: the tension between the values of Vcb determined from inclusive and exclusive semileptonic decays, and the gap between the sum of the exclusive semileptonic B decays to charm and the inclusive b -> c l nu rate. The full BABAR data set is used to improve the precision on decays involving D(*) pi l nu and to search for decays of the type D(*) pi pi l nu. Fully-reconstructed hadronic B decays are used to tag events and provide good resolution on the discriminant variable U = E_{miss}-P_{miss}. A simultaneous fit to charged and neutral B decays to D(n\pi) and D*(n\pi) decays is used to extract relative branching fractions. In addition to studying these high mass charm final states, the data are used to determine a precise measurement of the ratio of branching fractions for B -> D l nu / B -> D* l nu.

Presenter: Dr BERNLOCHNER, Florian Urs (Universitaet Bonn (DE))

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