



Contribution ID: 1116

Type: **Poster**

## **Precise measurements of the mass differences between the $D^*(2010)^+$ , and the $D^+$ and $D^0$ mesons with the BABAR detector**

*Monday 8 August 2016 18:30 (2 hours)*

We present a high precision measurement of the mass difference between the  $D(2010)^+$  and  $D^+$  mesons using the decay chain  $D(2010)^+ \rightarrow D^+ \pi^0$ , with  $D^+ \rightarrow K^- \pi^+ \pi^+$ . The analysis has been performed on a data sample corresponding to an integrated luminosity of about 477 fb<sup>-1</sup>, collected with the BABAR detector at the PEP-II e<sup>+</sup>e<sup>-</sup> collider. We additionally combine this result with a previous BABAR measurement of  $m(D^*(2010)^+) - m(D^0)$  to extract the mass difference between the charged and neutral D mesons. We obtain results that are approximately seven times more precise than the present world averages.

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**Session Classification:** Poster Session

**Track Classification:** Strong Interactions and Hadron Physics