

Abstract Submitted  
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**Missing Mass Calculator: Improvements and Application to Higgs to Ditau Searches at CMS** JEFFREY ROE, TAMU, CDF COLLABORATION, CMS COLLABORATION — Reconstructing events which decay into two  $\tau$ 's is difficult due to the missing energy attributed to multiple neutrinos in the  $\tau$  decays. Missing Mass Calculator (MMC) is a new, probabilistic mass reconstruction technique which has been shown to achieve significant improvement over previously used methods for reconstructing ditau events. The technique was first implemented and proven effective for the CDF experiment at Tevatron and later for the ATLAS experiment at the LHC. We discuss improvements to the existing MMC algorithm aimed at increasing the speed, and efficiency, as well as reconstruction accuracy and resolution, with the intention of utilizing the technique to improve the Higgs to ditau searches being conducted at the CMS experiment and achieve the sensitivity necessary to perform effective searches for Higgs in the  $\tau\tau$  channel there.

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