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Development of Charm quark Tagger at the CMS Detector

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Various final state channels at, the Compact Muon Solenoid (CMS), contain charm quark jets. Charm quarks can be hadronized to D mesons which could travel some distance in the tracker before decaying, providing the displaced tracks and vertices. The CMS silicon tracker allows the precise reconstruction of such vertices and tracks that are displaced with respect to the primary interaction point. The identification of charm jets or "c tagging" algorithm is constructed based on the b tagging algorithms. Particle Physics Research Laboratory at Chulalongkorn University, as a part of the c tagging team, is currently studying the c tagging algorithm in order to maximize the performance. This study will be vital for both supersymmetry (SUSY) searches such as stop ($\tilde{t}$), the SUSY partner of standard model (SM) top, that may subsequently decay to a charm quark and the lightest supersymmetric particle (LSP) and for SM precision measurements in the new data taking at the Large Hardron Collider (LHC) in 2015.

Primary author: KOVITANGGOON, Kittikul (Department of Physics, Faculty of Science, Chulalongkorn University, Bangkok 10330 , Thailand)

Co-author: Dr ASAVAPIBHOP, Burin (Department of Physics, Faculty of Science, Chulalongkorn University, Bangkok 10330 , Thailand)

Presenter: KOVITANGGOON, Kittikul (Department of Physics, Faculty of Science, Chulalongkorn University, Bangkok 10330 , Thailand)

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