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New method for precise determination of top quark mass at LHC

We propose a new method to measure the top quark mass at the LHC. This method requires only lepton energy distribution and is basically independent of the production process of the top quark. With this method, the pole and $\overline{\text{MS}}$ masses of the top quark can be determined. We investigate the experimental viability of the method performing a detailed simulation analysis at the leading order. The results show that this method has a possibility to achieve a high precision less than 1 GeV in determining theoretically well-defined top quark masses by including higher-order corrections.

Author: Dr KAWABATA, Sayaka (Tohoku University)

Co-authors: Dr YOKOYA, Hiroshi (University of Toyama); Dr SHIMIZU, Yasuhiro (Kogakuin University); Prof. SUMINO, Yukinari (Tohoku University)

Presenter: Dr KAWABATA, Sayaka (Tohoku University)

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