

Using the W as a Standard Candle to Reach the top

mercoledì 31 luglio 2024 16:40 (20 minuti)

Precision measurements of the top quark mass at hadron colliders have been notoriously difficult. Energy-energy correlators (EECs) provide clean access to angular correlations in the hadronic energy flux, but their application to the precision mass measurements is less direct since they measure a dimensionless angular scale.

Inspired by the use of standard candles in cosmology, I will show that a single EEC-based observable can be constructed that reflects the characteristic angular scales of both the W -boson and top quark masses. This gives direct access to the dimensionless quantity m_t/m_W , from which m_t can be extracted in a well-defined short-distance scheme as a function of the well-known m_W and a purely angular measurement. I will demonstrate several remarkable properties of this observable as well as its statistical feasibility and robustness for the LHC. This proposal provides a road map for a rich program for top mass determination at the LHC with record precision.

Autori principali: PATHAK, Aditya (DESY); SCHWARZ, Dennis (Austrian Academy of Sciences); MOULT, Ian (Yale University); Dr. HOLGUIN, Jack (University of Manchester); SCHÖFBECK, Robert

Relatore: PATHAK, Aditya (DESY)

Classifica Sessioni: Electroweak, Higgs and Top

Classificazione della track: Electroweak, Higgs and Top