Status 29.10.2024

- Tim Rexrodt

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$$T = \min\left(\chi^2_{12}, \chi^2_{21}\right) \quad \text{where:} \quad \chi^2_{ij} = \min_{p^\nu_z} \left[\frac{\left(m^2_{b_i l\nu} - m^2_t\right)^2}{\sigma^4_t} + \frac{\left(m^2_{l\nu} - m^2_W\right)^2}{\sigma^4_W} + \frac{\left(m^2_{b_j qq} - m^2_t\right)^2}{\sigma^4_t} + \frac{\left(m^2_{qq} - m^2_W\right)^2}{\sigma^4_W} \right]$$

$$H = \min_{p^\nu_z} \left[\frac{\left(m^2_{l\nu qq} - m^2_H\right)^2}{\sigma^4_H} + \min\left(\frac{\left(m^2_{l\nu} - m^2_W\right)^2}{\sigma^4_W} + \frac{\left(m^2_{qq} - m^2_{W^*_{peak}}\right)^2}{\sigma^4_{W^*}}, \frac{\left(m^2_{qq} - m^2_W\right)^2}{\sigma^4_W} + \frac{\left(m^2_{l\nu} - m^2_{W^*_{peak}}\right)^2}{\sigma^4_{W^*}} \right) \right]$$

- Source of formula:
  - "Search for Higgs boson pair production in the single-lepton WWbb channel with the ATLAS detector" by Valerio D'Amico (CERN-THESIS-2020-365)
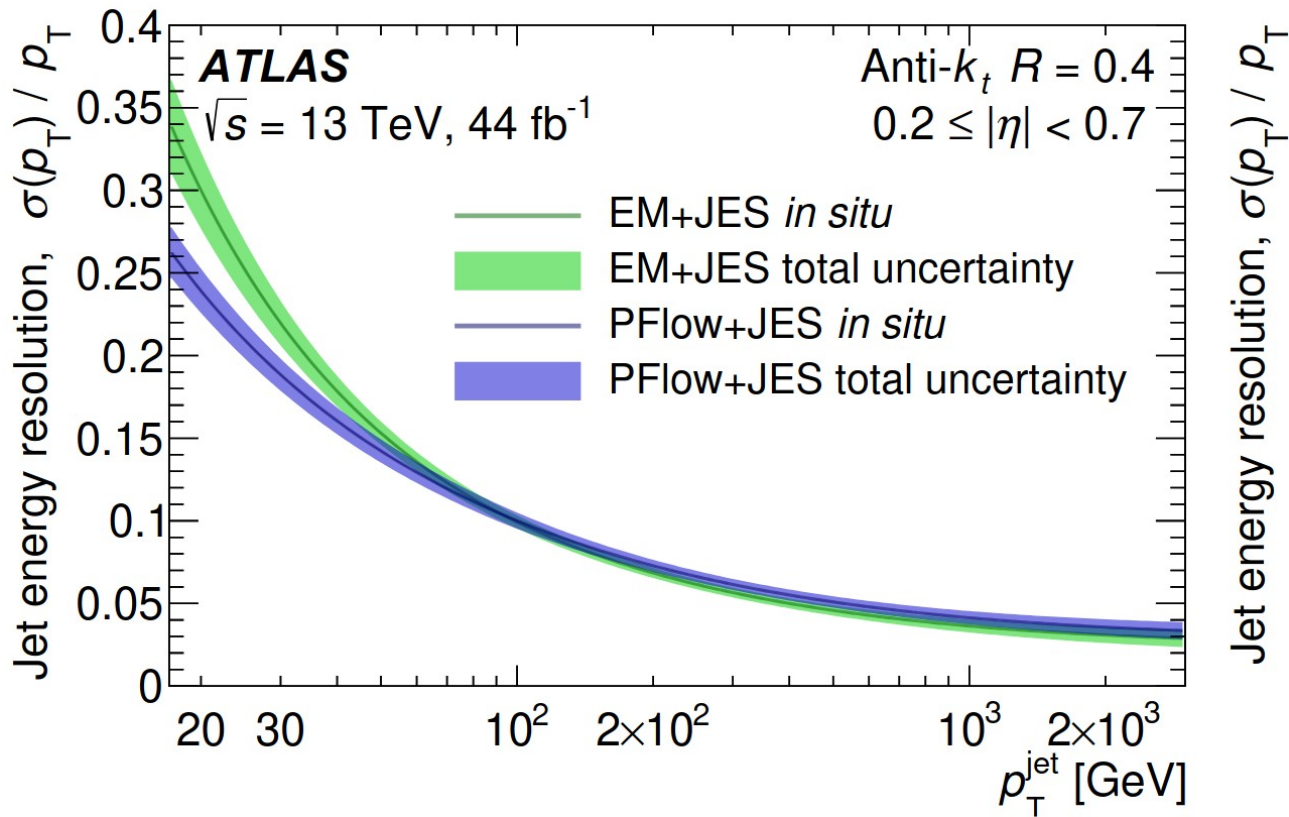
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- Source for diagram
  - "Jet energy scale and resolution measured in proton–proton collisions at sqrt(s) = 13 TeV with the ATLAS detector" by The ATLAS Collaboration (https://arxiv.org/pdf/2007.02645)

With Smearing

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Sources

- – "Jet energy scale and resolution measured in proton–proton collisions at sqrt(s) = 13 TeV with the ATLAS detector" by The ATLAS Collaboration (https://arxiv.org/pdf/2007.02645)

- – "Search for Higgs boson pair production in the single-lepton WWbb channel with the ATLAS detector" by Valerio D'Amico (CERN-THESIS-2020-365)