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The matrix element method in the search for dileptonic $t\bar{t}H(H \rightarrow b\bar{b})$

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With the expected reach of $t\bar{t}H(H \rightarrow b\bar{b})$ not quite approaching Standard Model sensitivity, it is important to squeeze as much information out of the data as possible. The matrix element method calculates the probability of an event coming from signal ($t\bar{t}H$) and background ($t\bar{t}b\bar{b}$) decay process by calculating the most likely kinematics of the hard scattering partons and comparing with the kinematics of the reconstructed objects. This talk will focus on $t\bar{t}H$ physics and the theory, implementation and results of the matrix element method in this channel.

Primary author: CONNELLY, Ian Allan (Royal Holloway, University of London)

Presenter: CONNELLY, Ian Allan (Royal Holloway, University of London)

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