Laboratoire LEPRINCE-RINGUET
Ecole polytechnique IN2P3/CNRS

# Séminaire

## A Comparison between the Cut-and-Count method with the (Modified) Matrix Element Method in a simple extension of the SM: $L_\mu$-$L_\tau$ model

In this talk, I will compare the discriminatory power of the cut-and-count method with the matrix element method, in constraining a simple extension of the SM, namely the $L_\mu$-$L_\tau$ interactions. The Z' associated with the spontaneously broken U(1)_{$L_\mu$-$L_\tau$} symmetry only interacts with the second and third generation of leptons at tree level, and is thus difficult to produce at the LHC. I argue the best channels to look for such Z' are $Z' \to 4\mu$ and $Z' \to 2\mu$+MET. Both of these channels have a large number of observables which strongly motivates the usage of a multivariant technique. I will show that the matrix element method as a multivariant technique – with some modifications to make the calculation easier – can improve our sensitivity by a factor of 5 to 10 compared with the cut-and count method.

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Responsables séminaires

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