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Experimental prospects for indirect BSM searches in $e^+e^- \rightarrow q\bar{q}$, $q = c, b$ processes at ILC

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Future Higgs Factories will allow the precise study of $e^-e^+ \rightarrow q\bar{q}$ with $q = s, c, b, t$ interactions at different energies, from the Z-pole up to high energies never reached before.

In this contribution, we will discuss the experimental prospects for the measurement of differential observables in $e^-e^+ \rightarrow b\bar{b}$ and $e^-e^+ \rightarrow c\bar{c}$ processes at high energies, 250 and 500 GeV, using full simulation samples and the full reconstruction chain from the ILD concept group.

These processes call for superb primary and secondary vertex measurements, a high tracking efficiency to correctly measure the vertex charge and excellent hadron identification capabilities using dE/dx . This latter aspect will be discussed in detail together with its implementation within the standard flavour tagging tools developed for ILD (LCFIPlus). In addition, prospects associated to potential improvements of the dE/dx reconstruction using cluster counting techniques will be also discussed. Finally, we will briefly discuss the potential of discovery of BSM models such as Randall-Sundrum models with warped extra dimensions, profiting from measurements of b/c quark related observables at different beam energies and polarisations.

Primary authors: Dr IRLES, Adrian (IFIC (CSIC/UV)); Mr MÁRQUEZ HERNÁNDEZ, Jesús Pedro (IFIC (CSIC/UV))

Presenter: Mr MÁRQUEZ HERNÁNDEZ, Jesús Pedro (IFIC (CSIC/UV))

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