

# Heavy quark production in high energy electron positron collisions

*Friday 31 July 2020 12:00 (25 minutes)*

The process  $ee \rightarrow qq$  with  $qq = cc, bb, tt$  plays a central role in the physics programs of high energy electron-positron colliders. Polarised beams as available at the international collider ILC are an essential input for the complete measurement of the helicity amplitudes that govern the production cross section. Heavy quarks are likely messengers to new physics and at the same time they are ideal benchmark processes for detector optimisation. All three processes call for superb primary and secondary vertex measurements and a high tracking efficiency to correctly measure the vertex charge. Charm and bottom production are already available below the  $t\bar{t}$  threshold. The program must be completed by the measurement of electroweak  $t\bar{t}$  production. We will show with detailed detector simulations of the ILD Detector that production rate and the forward backward asymmetries of the three processes can be measured at the 0.1% - 0.5% level and how systematic errors can be controlled to reach this level of accuracy. The discovery potential in terms of Randall-Sundrum models with warped extra dimensions will be outlined.

## I read the instructions

## Secondary track (number)

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**Session Classification:** Top Quark and Electroweak Physics

**Track Classification:** 04. Top Quark and Electroweak Physics