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## Prospects for Higgs Physics at a Large Hadron Electron Collider (LHeC Study Group)

*Saturday, 7 July 2012 17:00 (15 minutes)*

The Large Hadron electron Collider (LHeC) is a proposed facility which will collide an LHC proton beam with a new 60 GeV electron beam. This contribution summarises the LHeC prospects for Higgs physics, as documented in the recently released Conceptual Design Report. Assuming a light Higgs boson, the dominant  $b\bar{b}$  coupling can be measured and other Standard model properties of the decay can be tested. The dominant Standard Model production mechanism via  $WW$  fusion yields a clean final state signature with missing transverse momentum and one high transverse momentum jet in addition to the Higgs decay products and also contains two rapidity gaps. Isolating this channel will allow sensitive tests of the CP structure and other properties of the  $HWW$  vertex, which lies at the heart of electroweak symmetry breaking.

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