

ANTIMATTER MATTERS: THE LARGE HADRON COLLIDER BEAUTY EXPERIMENT AT CERN

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The Large Hadron Collider (LHC) at CERN is the world's largest and most powerful particle accelerator. This facility and the physics opportunities it makes available will be outlined. One of the four large experiments at the LHC is the Large Hadron Collider beauty (LHCb) experiment, which has a particular focus on the study of differences between matter and antimatter. Over 700 scientific papers have resulted from its initial operating period (2010-2018), including the discovery of new types of matter antimatter difference and of over 60 new particles. The next era has now started for LHCb, with the Upgrade I experiment installed and taking data. This major upgrade allows a significant increase of data rate and provides a more powerful system for identifying the events to be retained for further study. Beyond this, the collaboration is planning an Upgrade II for the 2030s, an ambitious flavour physics experiment for the High-Luminosity LHC.
