

APR17-2016-020122

Abstract for an Invited Paper
for the APR17 Meeting of
the American Physical Society

Robert R. Wilson Prize III: Applications of Intrabeam Scattering Formulae to a Myriad of Accelerator Systems

SEKAZI K. MTINGWA, Massachusetts Institute of Technology

We discuss our entree into accelerator physics and the problem of intrabeam scattering in particular. We focus on the historical importance of understanding intrabeam scattering for the successful operation of Fermilab's Accumulator and Tevatron and the subsequent hunt for the top quark, and its importance for successful operation of CERN's Large Hadron Collider that discovered the Higgs boson. We provide details on intrabeam scattering formalisms for hadron and electron beams at high energies, concluding with an Ansatz by Karl Bane that has applications to electron damping rings and synchrotron light sources.