

Abstract Submitted
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A Monte Carlo Study of NMSSM Higgs Searches at the Large Hadron Collider¹ ANIL SINGH, Fermilab/Panjab Univeristy, SUMAN BERI, Panjab University, Chandigarh, India, PUSHPALATHA BHAT, STEPHEN MRENNNA, Fermilab, Batavia, IL 60510, USA, HARRISON PROSPER, Florida State University, Tallahassee, Florida — We present a Monte Carlo study of the potential to observe Higgs bosons in the Next-to-Minimal SuperSymmetric Standard Model (NMSSM) at the Large Hadron Collider. We consider Higgs bosons that decay predominantly into a pair of light pseudoscalars (axions), which are kinematically constrained to decay into four tau leptons. The four-tau final state is important as it may arise in many models of new physics beyond the standard model where new light states form the dominant decay modes for the Higgs Boson. The analysis we present is also applicable to many other models with extended Higgs sectors. The study has been confined to the axion mass range $2m_\tau < m_a < 2m_b$ so as to ensure that axions decay preferentially into tau leptons. This mass range provides a distinctive signal especially when the taus decay to electrons and muons.

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