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Autore	Caillol Cécile
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Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Introduction -- Part I: Theoretical Bases -- The Standard Model of Particle Physics -- Physics Beyond the Standard Model -- Statistics -- Part II: Experimental Bases -- Experimental Setup -- Event Generation, Simulation and Reconstruction -- Tau Lepton Reconstruction and Identification -- Part III: SM Physics Analyses -- Search for the SM Scalar in the ZH `` Channel -- Search for the SM Scalar in the WH Eµh Channel -- Combination of Searches for the SM Scalar Boson Decaying to Taus -- Part IV: BSM Physics Analyses -- Search for a Heavy Pseudoscalar Boson a Decaying to Zh in the `` nal State -- Search for Exotic Decays of the SM-Like Scalar Boson in the µµ nal State -- Search for a Light Pseudoscalar Decaying to Taus -- Search for a Heavy Di-Tau Resonance in the MSSM -- Part V: Status and Prospects -- Overview of LHC Results and Prospects for Future Colliders -- Conclusion.
Sommario/riassunto	This thesis presents a study of the scalar sector in the standard model (SM), as well as various searches for an extended scalar sector in theories beyond the SM (BSM). The first part of the thesis details the search for an SM Higgs boson decaying to taus, and produced by gluon

fusion, vector boson fusion, or associated production with a vector boson, leading to evidence for decays of the Higgs boson to taus. In turn, the second part highlights several searches for an extended scalar sector, with scalar boson decays to taus. In all of the analyses presented, at least one scalar boson decays to a pair of taus. The results draw on data collected by the Compact Muon Solenoid (CMS) detector during proton–proton collisions with a center-of-mass energy of 7 or 8 TeV.

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