1. Record Nr. UNINA9910254583503321

Autore	Gustavino Giuliano
Titolo	Search for New Physics in Mono-jet Final States in pp Collisions : at s=13 TeV with the ATLAS Experiment at the LHC / / by Giuliano Gustavino
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2017
ISBN	3-319-58871-0
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (XV, 236 p. 132 illus., 42 illus. in color.)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	539.736
Soggetti	Particles (Nuclear physics) Quantum field theory Cosmology Mathematical physics Elementary Particles, Quantum Field Theory Theoretical, Mathematical and Computational Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"Doctoral Thesis accepted by Sapienza University of Rome, Italy."
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Introduction -- The Standard Model -- Beyond the Standard Model -- The Dark Matter Paradigm -- Experimental Facilities -- Physics Objects -- The Mono-jet Analysis -- Mono-jet Versus All -- Mono-jet Analysis Improvements -- Conclusions.
Sommario/riassunto	This thesis provides a detailed and comprehensive description of the search for New Physics at the Large Hadron Collider (LHC) in the mono-jet final state, using the first 3.2~fb^{-1} of data collected at the centre of mass energy of colliding protons of 13~TeV recorded in the ATLAS experiment at LHC. The results are interpreted as limits in different theoretical contexts such as compressed supersymmetric models, theories that foresee extra-spatial dimensions and in the dark matter scenario. In the latter the limits are then compared with those obtained by other ATLAS analyses and by experiments based on completely different experimental techniques, highlighting the role of the mono-jet results in the context of dark matter searches. Lastly, a

set of possible analysis improvements are proposed to reduce the main uncertainties that affect the signal region and to increase the discovery potential by further exploiting the information on the final state.