

1. Record Nr.	UNINA9910300160603321
Autore	Zinser Markus
Titolo	Search for New Heavy Charged Bosons and Measurement of High-Mass Drell-Yan Production in Proton—Proton Collisions // by Markus Zinser
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2018
ISBN	3-030-00650-6
Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (386 pages) : illustrations
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	539.7234
Soggetti	Particles (Nuclear physics) Quantum field theory String models Elementary Particles, Quantum Field Theory Quantum Field Theories, String Theory
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Introduction -- Part I: Theory -- Theory Foundations -- Theoretical Predictions and Simulation -- Part II: The Experimental Setup -- The Large Hadron Collider -- The ATLAS Experiment -- Particle Reconstruction and Identification in ATLAS -- Part III: Search for New Physics in Final States with One Lepton Plus Missing Transverse Momentum at $s = 13$ TeV -- Motivation -- Analysis Strategy -- Analysis -- Statistical Interpretation -- Conclusion and Outlook -- Part IV: High-mass Drell-Yan Cross Section Measurement at $s = 8$ TeV -- Motivation -- Analysis Strategy -- Analysis of the Electron Channel -- Electron Channel Cross Section Measurement -- Muon Channel Cross Section -- Results and Interpretation -- Conclusion and Outlook -- Summary.
Sommario/riassunto	This book presents two analyses, the first of which involves the search for a new heavy charged gauge boson, a so-called $W\phi$ boson. This new gauge boson is predicted by some theories extending the Standard Model gauge group to solve some of its conceptual problems. Decays of the $W\phi$ boson in final states with a lepton (e^{\pm} , μ^{\pm}) and the corresponding (anti-)

neutrino are considered. Data collected by the ATLAS experiment in 2015 at a center of mass energy of $\sqrt{s}=13$ TeV is used for the analysis. In turn, the second analysis presents a measurement of the double-differential cross section of the process $pp \rightarrow Z/\gamma^* + X \rightarrow l^+l^- + X$, including a $\gamma\gamma$ induced contribution, at a center of mass energy of $\sqrt{s} = 8$ TeV. The measurement is performed in an invariant mass region of 116 GeV to 1500 GeV as a function of invariant mass and absolute rapidity of the l^+l^- pair, and as a function of invariant mass and pseudorapidity separation of the l^+l^- pair. The data analyzed was recorded by the ATLAS experiment in 2012 and corresponds to an integrated luminosity of 20.3/fb. It is expected that the measured cross sections are sensitive to the PDFs at very high values of the Bjorken- x scaling variable, and to the photon structure of the proton.
