1. Record Nr. UNINA9910300548903321 Autore Jörg Philipp Titolo Exploring the Size of the Proton: by Means of Deeply Virtual Compton Scattering at CERN / / by Philipp Jörg Pubbl/distr/stampa Cham:,: Springer International Publishing:,: Imprint: Springer,, 2018 **ISBN** 3-319-90290-3 Edizione [1st ed. 2018.] Descrizione fisica 1 online resource (XI, 230 p. 155 illus., 121 illus. in color.) Collana Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053 Disciplina 539.7092 Soggetti **Nuclear physics** Heavy ions Mathematical physics Nuclear Physics, Heavy Ions, Hadrons Theoretical, Mathematical and Computational Physics Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Nota di contenuto Introduction -- Theory -- The COMPASS-II Experiment -- The Kinematically Constrained Fit -- The 2012 DVCS Data -- Event Selection and Simulations -- The Cross Section and its t-Dependence -- Summary. Sommario/riassunto This book is a rare jewel, describing fundamental research in a highly dynamic field of subatomic physics. It presents an overview of cross section measurements of deeply virtual Compton scattering. Understanding the structure of the proton is one of the most important challenges that physics faces today. A typical tool for experimentally accessing the internal structure of the proton is lepton-nucleon scattering. In particular, deeply virtual Compton scattering at large photon virtuality and small four-momentum transfer to the proton provides a tool for deriving a three-dimensional tomographic image of the proton. Using clear language, this book presents the highly complex procedure used to derive the momentum-dissected transverse size of the proton from a pioneering measurement taken at CERN. It describes in detail the foundations of the measurement and the data

analysis, and includes exhaustive studies of potential systematic