1. Record Nr. UNINA9910508475603321

Autore	Shockley Evan
Titolo	Study of excess electronic recoil events in XENON1T / / Evan Shockley
Pubbl/distr/stampa	Cham, Switzerland : , : Palgrave Macmillan, , [2021] ©2021
ISBN	3-030-87752-3
Descrizione fisica	1 online resource (127 pages)
Collana	Springer theses
Disciplina	523.1126
Soggetti	Dark matter (Astronomy)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Intro -- Supervisor's Foreword -- Acknowledgments -- Contents -- 1 Searching for New Physics with XENON1T -- 1.1 The XENON1T Detector -- 1.1.1 The S1 Signal -- 1.1.2 The S2 Signal -- 1.1.3 Position Reconstruction -- 1.1.4 Particle Discrimination: Electronic vs. Nuclear Recoils -- 1.1.5 Background Reduction -- 1.2 Physics Reach of XENON1T -- 1.2.1 Solar Axions -- 1.2.2 Neutrino Magnetic Moment -- 1.2.3 Bosonic Dark Matter -- 2 Event Reconstruction and Selection -- 2.1 Energy Reconstruction and Resolution -- 2.1.1 Energy Reconstruction -- 2.1.2 Energy Resolution -- 2.2 Detection Efficiency -- 2.2.1 Single Photoelectron Acceptance -- 2.2.2 Reconstruction Efficiency -- 2.2.3 Efficiency as Function of Charge -- 2.2.4 Efficiency as Function of Reconstructed Energy -- 2.3 Event Selection -- 3 Background + Signal Modeling and Statistical Methods -- 3.1 Background Model -- 3.2 Signal Modeling -- 3.3 Statistical Framework -- 4 Results -- 4.1 Background-Only Fit -- 4.2 Investigating the Excess -- 4.3 Potential Backgrounds -- 4.3.1 Xenon X-Rays -- 4.3.2 37Ar -- 4.3.3 Tritium -- 4.4 Searches for New Physics in XENON1T ER Data -- 4.5 Search for Solar Axions -- 4.5.1 Main Results -- 4.5.2 Interpretation Under Specific QCD Models -- 4.5.3 Including Tritium as a Background -- 4.6 Search for an Enhanced Neutrino Magnetic Moment -- 4.6.1 Main Result -- 4.6.2 Including Tritium as a Background -- 4.7 Bosonic Dark Matter Results -- 4.8 Science Run 2 -- 4.9 Time Dependence -- 4.10 Updated Analysis -- 4.10.1 Summary of Updates -- 4.10.2 Results of Updated Analysis -- 5 Conclusions and

Outlook -- 5.1 Summary -- 5.2 Outlook: XENONnT -- 5.3 Conclusion -- References.