1. Record Nr. UNISA990000124630203316

Autore	Welsh, Jim
Titolo	Introduction to Modula-2 / Jim Welsh, John Elder
Pubbl/distr/stampa	New York [etc.] : Prentice Hall, copyr. 1987
ISBN	0-13-488610-0
Descrizione fisica	IX, 386 p. : ill. ; 24 cm
Collana	Prentice Hall international seriesin computer science ; 0
Disciplina	005133
Collocazione	005.133 WEL (A)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia

2. Record Nr. UNINA9910300373903321

Autore	Mertens Susanne
Titolo	Background Processes in the Electrostatic Spectrometers of the KATRIN Experiment / / by Susanne Mertens
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2014
ISBN	3-319-01177-4
Edizione	[1st ed. 2014.]
Descrizione fisica	1 online resource (203 p.)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	523.01
Soggetti	Particle acceleration Astrophysics Physics Physical measurements Measurement Particle Acceleration and Detection, Beam Physics Astrophysics and Astroparticles Numerical and Computational Physics, Simulation Measurement Science and Instrumentation
Lingua di pubblicazione	Inglese

Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Abstract -- Introduction and objectives of the thesis -- Neutrino Physics -- The KATRIN experiment -- Monte Carlo simulation package -- Muon induced background -- Background due to Penning traps -- Background due to stored electrons following nuclear decays -- Background due to stored electrons following nuclear decays -- Conclusion -- Optimization of the spectrometer transmission properties with the air coil system -- Comparison of transmission measurements at the pre-spectrometer with Kassiopeia simulations -- Alternative methods of removing stored electrons.
Sommario/riassunto	Neutrinos continue to be the most mysterious and, arguably, the most fascinating particles of the Standard Model as their intrinsic properties such as absolute mass scale and CP properties are unknown. The open question of the absolute neutrino mass scale will be addressed with unprecedented accuracy by the Karlsruhe Tritium Neutrino (KATRIN) experiment, currently under construction. This thesis focusses on the spectrometer part of KATRIN and background processes therein. Various background sources such as small Penning traps, as well as nuclear decays from single radon atoms are fully characterized here for the first time. Most importantly, however, it was possible to reduce the background in the spectrometer by more than five orders of magnitude by eliminating Penning traps and by developing a completely new background reduction method by stochastically heating trapped electrons using electron cyclotron resonance (ECR). The work beautifully demonstrates that the obstacles and challenges in measuring the absolute mass scale of neutrinos can be met successfully if novel experimental tools (ECR) and novel computing methods (KASSIOPEIA) are combined to allow almost background-free tritium ß-spectroscopy.