

1. Record Nr.	UNINA9910300418803321
Autore	Eversberg Thomas
Titolo	Spectroscopic Instrumentation : Fundamentals and Guidelines for Astronomers // by Thomas Eversberg, Klaus Vollmann
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2015
ISBN	3-662-44535-2
Edizione	[1st ed. 2015.]
Descrizione fisica	1 online resource (677 p.)
Collana	Astronomy and Planetary Sciences, , 2366-0082
Disciplina	520 530 621.3 621.36
Soggetti	Astronomy Astronomy—Observations Lasers Photonics Microwaves Optical engineering Astronomy, Observations and Techniques Optics, Lasers, Photonics, Optical Devices Microwaves, RF and Optical Engineering
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	Prologue -- Fundamentals of standard spectroscopy -- The construction of a grating spectrograph -- Fundamentals of Echelle spectroscopy -- The construction of an Echelle spectrograph -- Other designs -- Practical examples -- Image Slicer -- CCD -- Fiber optics -- Data reduction -- Measurement errors and statistics -- Practical Observations -- The next step – Polarization -- Epilogue -- Acknowledgements -- Appendices.
Sommario/riassunto	In order to analyze the light of cosmic objects, particularly at extremely great distances, spectroscopy is the workhorse of astronomy. In the era of very large telescopes, long-term investigations are mainly performed

with small professional instruments. Today they can be done using self-designed spectrographs and highly efficient CCD cameras, without the need for large financial investments. This book explains the basic principles of spectroscopy, including the fundamental optical constraints and all mathematical aspects needed to understand the working principles in detail. It covers the complete theoretical and practical design of standard and Echelle spectrographs. Readers are guided through all necessary calculations, enabling them to engage in spectrograph design. The book also examines data acquisition with CCD cameras and fiber optics, as well as the constraints of specific data reduction and possible sources of error. In closing it briefly highlights some main aspects of the research on massive stars and spectropolarimetry as an extension of spectroscopy. The book offers a comprehensive introduction to spectroscopy for students of physics and astronomy, as well as a valuable resource for amateur astronomers interested in learning the principles of spectroscopy and spectrograph design.

---