

Cambridge University Press

978-0-521-84711-7 - Introduction to Astronomical Photometry, Second Edition

Edwin Budding and Osman Demircan

Table of Contents

[More information](#)

Contents

	<i>Preface to first edition</i>	<i>page xi</i>
	<i>Preface to second edition</i>	xv
1	Overview	1
	1.1 Scope of the subject	1
	1.2 Requirements	2
	1.3 Participants	5
	1.4 Targets	6
	1.5 Bibliographical notes	8
	References	10
2	Introduction	11
	2.1 Optical photometry	11
	2.2 Historical notes	14
	2.3 Some basic terminology	27
	2.4 Radiation: waves and photons	32
	2.5 Bibliographical notes	34
	References	37
3	Underlying essentials	39
	3.1 Radiation field concepts	39
	3.2 Black body radiation	42
	3.3 The Sun seen as a star	44
	3.4 The bolometric correction	49
	3.5 Stellar fluxes and temperatures	51
	3.6 Broadband filters: essential points	56
	3.7 Surface flux and colour correlations	63
	3.8 Absolute parameters of stars	65

Cambridge University Press

978-0-521-84711-7 - Introduction to Astronomical Photometry, Second Edition

Edwin Budding and Osman Demircan

Table of Contents

[More information](#)

viii	<i>Contents</i>	
	3.9 Bibliographical notes	68
	References	70
4	Themes of astronomical photometry	72
	4.1 Extinction	72
	4.2 Broadband filters: data and requirements	80
	4.3 Photometry at intermediate bandwidths	92
	4.4 Narrowband photometry	103
	4.5 Fast photometry	110
	4.6 Photometry of extended objects	116
	4.7 Photopolarimetry	138
	4.8 Bibliographical notes	151
	References	157
5	Practicalities	161
	5.1 Overview of basic instrumentation	161
	5.2 Detectors	170
	5.3 Conventional measurement methods	192
	5.4 Bibliographical notes	200
	References	202
6	Procedures	204
	6.1 The standard stars experiment	204
	6.2 Differential photometry	221
	6.3 Application of CCD cameras	231
	6.4 Light curves of variable stars	237
	6.5 Bibliographical notes	242
	References	245
7	Basic light curve analysis	247
	7.1 Light curve analysis: general outline	247
	7.2 Eclipsing binaries: basic facts	249
	7.3 Hand solution of light curves	257
	7.4 Computer-based analysis	262
	7.5 Bibliographical notes	272
	References	276
8	Period changes in variable stars	279
	8.1 Variable stars and periodic effects	279
	8.2 Complexities in O – C diagrams	284
	8.3 Period changes: observational aspects	288

Cambridge University Press

978-0-521-84711-7 - Introduction to Astronomical Photometry, Second Edition

Edwin Budding and Osman Demircan

Table of Contents

[More information](#)

<i>Contents</i>		ix
8.4	Period changes: theoretical aspects	298
8.5	Statistical data on Algol binaries	301
8.6	Bibliographical notes	303
	References	307
9	Close binary systems	310
9.1	Coordinate transformation	310
9.2	Orbital eccentricity	312
9.3	Proximity effects	316
9.4	The 16-parameter curve fitter	320
9.5	Frequency domain analysis	325
9.6	Narrowband photometry of binaries	327
9.7	Bibliographical notes	335
	References	338
10	Spotted stars	341
10.1	Introductory background	341
10.2	The photometric effects of starspots	344
10.3	Application to observations	348
10.4	Starspots in binary systems	358
10.5	Analysis of light curves of RS CVn-like stars	361
10.6	Bibliographical notes	370
	References	373
11	Pulsating stars	375
11.1	Introductory background	375
11.2	The Baade–Wesselink procedure	383
11.3	Six-colour data on classical cepheids	388
11.4	Pulsational radii	400
11.5	Bibliographical notes	406
	References	409
	Appendix	411
	Author index	413
	Subject index	421