

**Landolt-Börnstein**  
**Group VI: Astronomy and Astrophysics**

**Volume 2**  
**Astronomy and Astrophysics**

**Subvolume B**  
**Stars and Star Clusters**

Introductory material

4	The stars	1
4.1	Physical parameters of the stars	1
4.1.0	General remarks	1
4.1.1	Classification of stellar spectra	1
4.1.2	Intrinsic colors and visual absolute magnitudes (calibration of the MK system)	14
4.1.3	Hertzsprung-Russel diagram, color-magnitude diagrams	25
4.1.4	Effective temperatures, bolometric corrections and luminosities	451
4.1.5	Mass, radius, density, surface gravity	28
4.1.6	Rotation of stars	32
4.2	Magnitudes and colors	35
4.2.0	General remarks	35
4.2.1	Data dissemination centers	35
4.2.2	Definitions	35
4.2.3	General problems in photometry of stars	38
4.2.4	Photographic photometry	40
4.2.5	Photoelectric photometry	44
4.3	Physics of stellar atmospheres	91
4.3.1	General references	91
4.3.2	List of generally and frequently used symbols	91
4.3.3	Basic equations	92
4.3.4	Statistical equilibrium and cross-sections	96
4.3.5	Thermodynamic properties	122
4.3.6	Methods of computation of stellar model atmospheres	136
4.3.7	"Non-standard" stellar model atmospheres	146
4.4	Stellar structure and evolution	152
4.4.0	List of symbols	152
4.4.1	Equation of stellar structure	154
4.4.2	Properties of stellar matter	155
4.4.3	Model computations	188
4.4.4	References for 4.4	194
5	Special types of stars	197
5.1	Variable stars	197
5.1.0	Abbreviations and notations	197
5.1.1	Definitions and general remarks	198
5.1.2	Pulsating and rotating variables	203
5.1.3	Eruptive and depression variables	228

5.2	Peculiar stars	269
5.2.0	Introduction, general remarks	269
5.2.1	Peculiar stars of early spectral classes (O - A)	272
5.2.2	Peculiar stars in the range B - F	318
5.2.3	Peculiar stars of late spectral classes (G - M)	347
5.3	Protostars, pre-main sequence objects	357
5.4	Planetary nebulae	364
5.5	White dwarfs	373
5.6	Compact objects (See Vol. 2C)	
5.7	X-ray and gamma-ray sources (See Vol. 2C)	
6	Double stars and star clusters	381
6.1	Double stars	381
6.1.0	General remarks	381
6.1.1	Visual double stars	387
6.1.2	Astrometric binaries and systems with unseen companions	393
6.1.3	Spectroscopic binaries	395
6.1.4	X-ray binaries	403
6.1.5	Photometric or eclipsing binaries	408
6.2	Star clusters and associations	420
6.2.1	Globular clusters	420
6.2.2	Open clusters	432
6.2.3	Associations	445
	Comprehensive index (See Vol. 2C)	