Appendix C
Physical and Astronomical Constants and Unit Conversions

Table C.1 Physical constants.

Quantity	Symbol	Value	Units
Speed of light	c	$2.997\,924\,58 \times 10^{10}$	cm^{-1}
Gravitational constant	G	$6.672\,59(85) \times 10^{-8}$	$\mathrm{dyn\,cm^2\,g^{-2}}$
Planck constant	h	$6.626\,075\,5(40) \times 10^{-27}$	$\mathrm{erg\,s^{-1}}$
Boltzmann constant	k	$1.380\,658(12) \times 10^{-16}$	$\mathrm{erg\,K^{-1}}$
Stefan–Boltzmann constant	σ	$5.670\,51(19) \times 10^{-5}$	$\mathrm{erg\,cm^{-2}\,K^{-4}\,s^{-1}}$
Thomson cross-section	σ_{T}	$0.665\,246\,16 \times 10^{-24}$	cm^2
Electron charge	e	$4.803\,206\,8(15) \times 10^{-10}$	E.S.U.
Electron mass	m_{e}	$9.109\,389\,7(54) \times 10^{-28}$	g
Proton mass	m_{p}	$1.672\,623\,1(10) \times 10^{-24}$	g
Neutron mass	m_{n}	$1.674\,928\,6 \times 10^{-24}$	g
Atomic mass unit	m_{u}	$1.660\,540\,2 \times 10^{-24}$	g
Electron volt	eV	$1.602\,173\,3 \times 10^{-12}$	erg

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Table C.2 Astronomical constants.

Quantity	Symbol	Value	Units
Astronomical unit	AU	1.496×10^{13}	cm
Parsec	pc	3.086×10^{18}	cm
Solar mass	$M_\odot$	1.989×10^{33}	g
Solar radius	$R_\odot$	6.955×10^{10}	cm
Solar luminosity	$L_\odot$	3.845×10^{33}	$\mathrm{erg\,s^{-1}}$
Solar absolute bolometric magnitude	$M_{\mathrm{bol},\odot}$	4.72	mag
Solar absolute B magnitude	$M_{B,\odot}$	5.48	mag
Solar absolute V magnitude	$M_{V,\odot}$	4.83	mag
Solar absolute J magnitude	$M_{J,\odot}$	3.71	mag
Solar absolute H magnitude	$M_{H,\odot}$	3.37	mag
Solar absolute K magnitude	$M_{K,\odot}$	3.35	mag

Table C.3 Unit conversions.

Quantity	Symbol	Conversion
Angström	Å	$1\,\text{Å} = 10^{-8}\,\mathrm{cm}$
Micron	μm	$1\,\mu\mathrm{m} = 10^{-4}\,\mathrm{cm}$
Parsec	pc	$1\,\mathrm{pc} = 3.086 \times 10^{18}\,\mathrm{cm}$
Light year	ly	$9.460\,530 \times 10^{17}\,\mathrm{cm}$
Kilo-electron volt	keV	$hc/E = 12.398\,54 \times 10^{-8}\,\mathrm{cm}$
Jansky	Jy	$10^{-23}\,\mathrm{erg\,cm^{-2}\,s^{-1}\,Hz^{-1}}$