ASTR367
Units!

CGS, everyone's favorite

Quantity	CGS Unit	Unit definition	Equivalent in SI units
length	cm	1/100 of meter	$= 10^{-2}$ m
mass	g	1/1000 of kilogram	$= 10^{-3}$ kg
time	s	1 second	$= 1$ s
velocity	cm/s	cm/s	$= 10^{-2}$ m/s
acceleration	gal	$\mathrm{cm/s^2}$	$= 10^{-2}$ $\mathrm{m/s^2}$
force	dyn	$\mathrm{g\ cm/s^2}$	$= 10^{-5}$ N
energy	erg	$\mathrm{g\ cm^2/s^2}$	$= 10^{-7}$ J
power	erg/s	$\mathrm{g\ cm^2/s^3}$	$= 10^{-7}$ W
pressure	Ba	$\mathrm{g/(cm\ s^2)}$	$= 10^{-1}$ Pa

Units Specific to Astronomy

Mass: $M_\odot = 1.9891 \times 10^{30}\,\mathrm{kg} = 1.9891 \times 10^{33}\,\mathrm{g}$

Radius: $R_\odot = 6.955 \times 10^{8}\,\mathrm{m} = 6.955 \times 10^{10}\,\mathrm{cm}$

Luminosity: $L_\odot = 3.84 \times 10^{26}\,\mathrm{W} = 3.84 \times 10^{33}\,\mathrm{erg/s}$ [Note: this is "bolometric" luminosity over all wavelengths]

Distances can get pretty big too, so we'll use the unit of "parsec" (pc). Sometimes astronomical units (AU) are used.

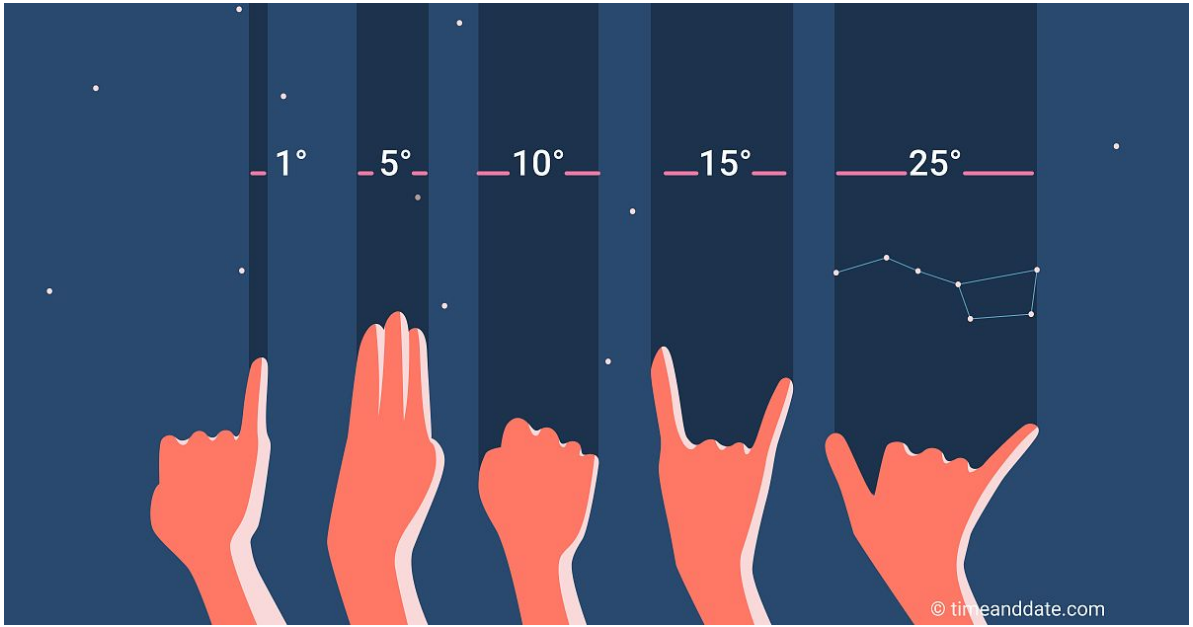
$\mathrm{AU} = 1.496 \times 10^{11}\,\mathrm{m} = 1.496 \times 10^{13}\,\mathrm{cm}$ Useful within the Solar system.

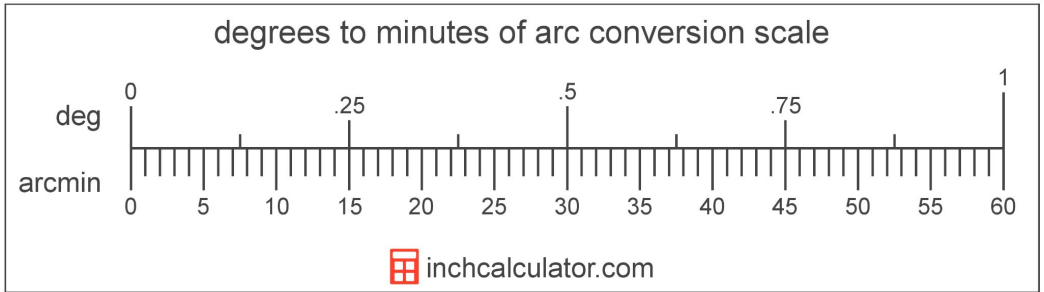
$\mathrm{pc} = 3.08 \times 10^{16}\,\mathrm{m} = 3.08 \times 10^{18}\,\mathrm{cm}$ Useful for nearest stars

$\mathrm{kpc} = 10^{3}\,\mathrm{pc} = 3.08 \times 10^{19}\,\mathrm{m} = 3.08 \times 10^{21}\,\mathrm{cm}$ Useful for things in the Milky Way and the Local Group.

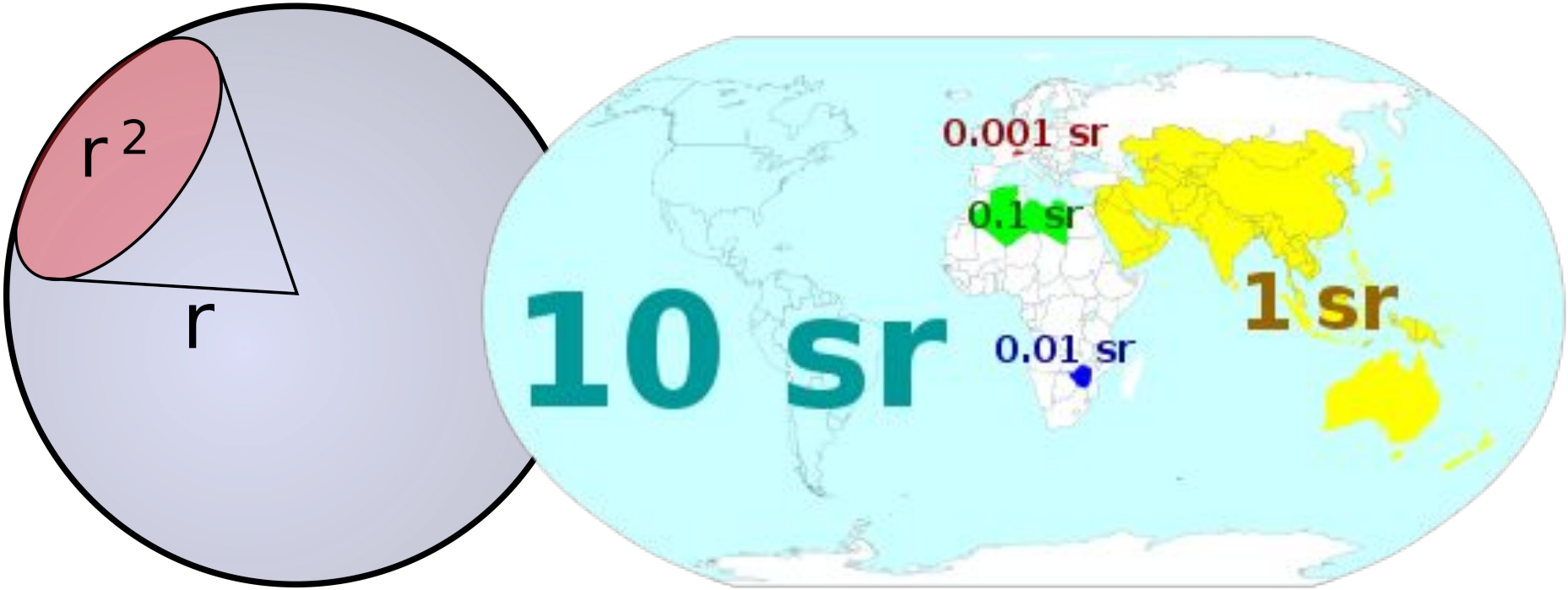
$\mathrm{Mpc} = 10^{6}\,\mathrm{pc} = 3.08 \times 10^{22}\,\mathrm{m} = 3.08 \times 10^{25}\,\mathrm{cm}$ Useful for external galaxies.

Angles

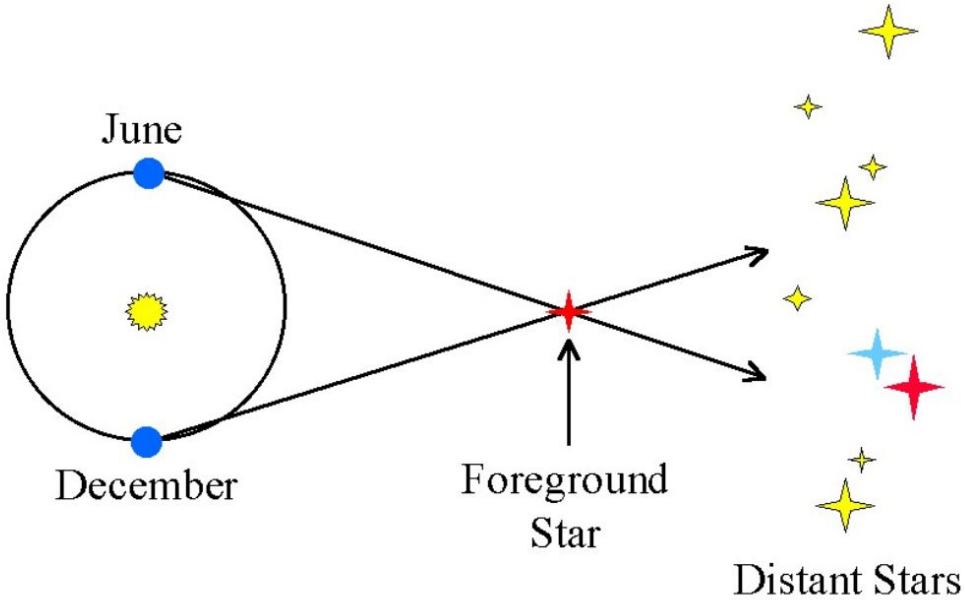

1°
5°
10°
15°
25°
© timeanddate.com


degrees to minutes of arc conversion scale
deg
arcmin
0
.25
.5
.75
1
0
5
10
15
20
25
30
35
40
45
50
55
60
inchcalculator.com

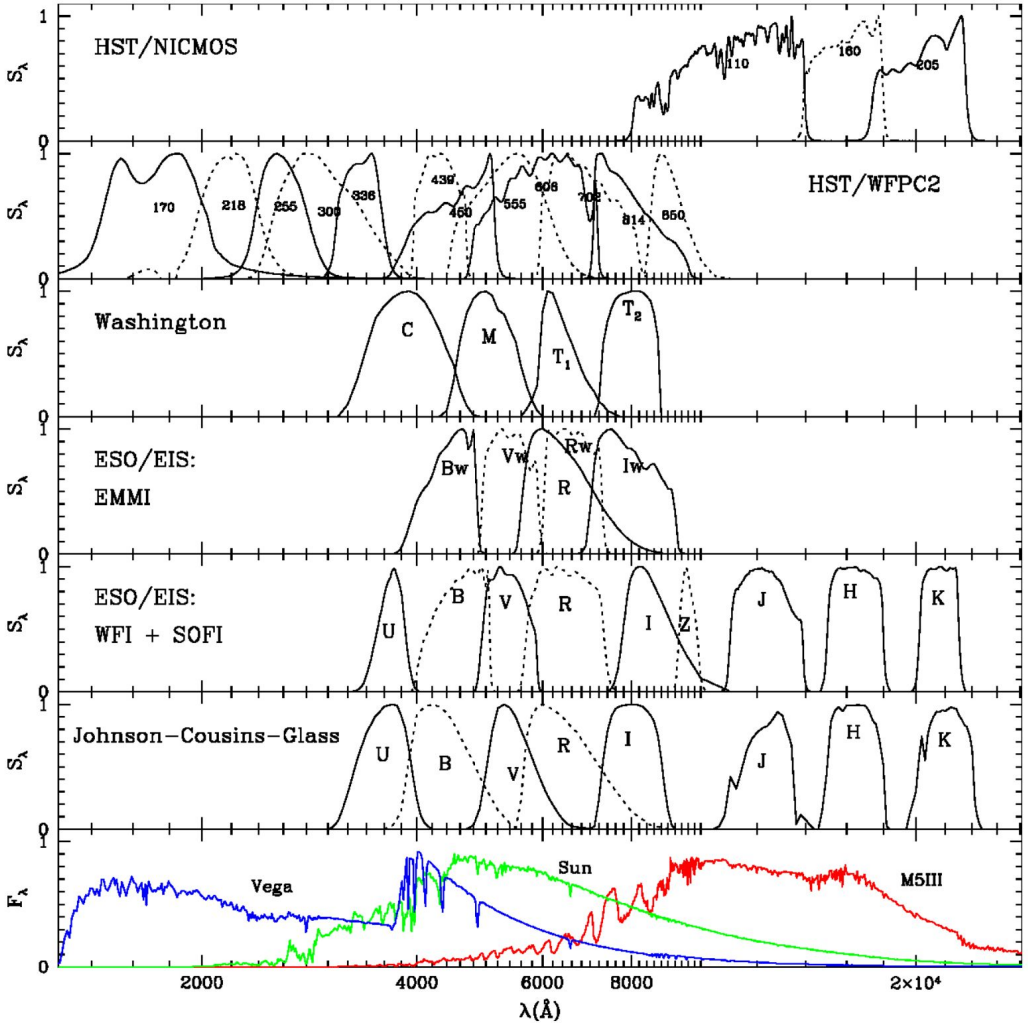
Solid Angle



Distances (parallax)



Filters


HST/NICMOS
110
160
205
HST/WFPC2
170
218
255
300
336
439
450
555
606
702
814
850
Washington
C
M
T1
T2
ESO/EIS:
EMMI
Bw
Vw
Rw
R
Iw
ESO/EIS:
WFI + SOFI
U
B
V
R
I
Z
J
H
K
Johnson–Cousins–Glass
U
B
V
R
I
J
H
K
Vega
Sun
M5III
Sλ
Fλ
2000
4000
6000
8000
2×10⁴
λ(Å)