

	MORPHOLOGY (y/n)					SUN		Isochrone Fitting									
	Main Sequence	Red Giant Branch	Horizontal Branch	Field Stars	Blue Stragglers	V = 0.62	y/n (<6?)	Gyr	Fe/H	m-M	E(B-V)	(m-M)0 ϑ	D(pc)				
Hipparcos																	
Hyades	y	n	n	y	n	7.318	n	0.06	0	4.5	0.33	3.477	49.59067275	1.023			
Praesepe	y	n	n	y	n	10.492	n	ZAMS	0	7.7	0.34	6.646	213.4027443	1.054			
Pleiades	y	n	n	n	n	9.975	n	0.06	0	5.7	0.07	5.483	124.9108029	0.217			
NGC 188	y	y	n	y	y	N/A		7.08	-0.04	11.25	0.07	11.033	1609.162859	0.217			
M 67	y	y	n	y	y	14.107	n	3.98	-0.04	9.65	0.04	9.526	803.8962449	0.124			
NGC 6611	y	n	n	y	n	N/A		ZAMS	0	11.15	0.01	11.119	1674.171714	0.031			
h+X Persei	y	n	n	y	n	16.19	n	ZAME	0	11.35	0	11.35	1862.087137	0			
NGC 6791	y	y	y	y	y	N/A		10	0.2	13.25	0.13	12.847	3710.222886	0.403			
NGC 104	y	y	y	y	n	18.107	n	16	-0.71	13.05	0.02	12.988	3959.132167	0.062			
M15	y	y	y	y	n	21.19	n	18	-2.14	15.15	0.08	14.902	9558.725719	0.248			

Isochrone n
Dust moves

Metallicity

$$[Fe/H] = \log(N_{Fe}/N_H) - \log(N_{Fe}/N_H)_\odot$$

= amount of Fe relative to the Sun in a star

$[Fe/H]_0 = 0$ = "metal rich" = young

$[Fe/H] = -1$ = "metal poor" → 10x less Fe than Sun → Older

$[Fe/H] = -7$ = "Ultra metal poor" → 10 million x less Fe than Sun → VERY Old

$[Fe/H]_{\text{cluster}} \approx -2.5$

Big Bang

- The further away something is, the fainter it appears
- Metallicity
- Star cycle accumulates
- Typically, metallicity

Metallicity

$[Fe/H]_{\text{cluster}} \approx -2.5$

- Dust absorbs and scatters light: the more dust, the "redder" something looks
- $(m-M)_0 = (m-M) - 3.1 \cdot E(B-V)$
- The further away something is, the fainter it appears
- Distance (pc) = $10^{(m-M)_0 + 5} / 5$
- Metallicity [Fe/H] can act as a cosmic clock:
 - Star cycle H into He into C...into Fe. This accumulates in the galaxy over cosmic time.
 - Typically, the younger a cluster is the higher the metallicity

Big Bang