Age and metallicity analysis of the Small Magellanic Cloud from star clusters

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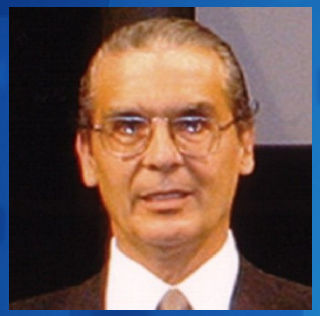

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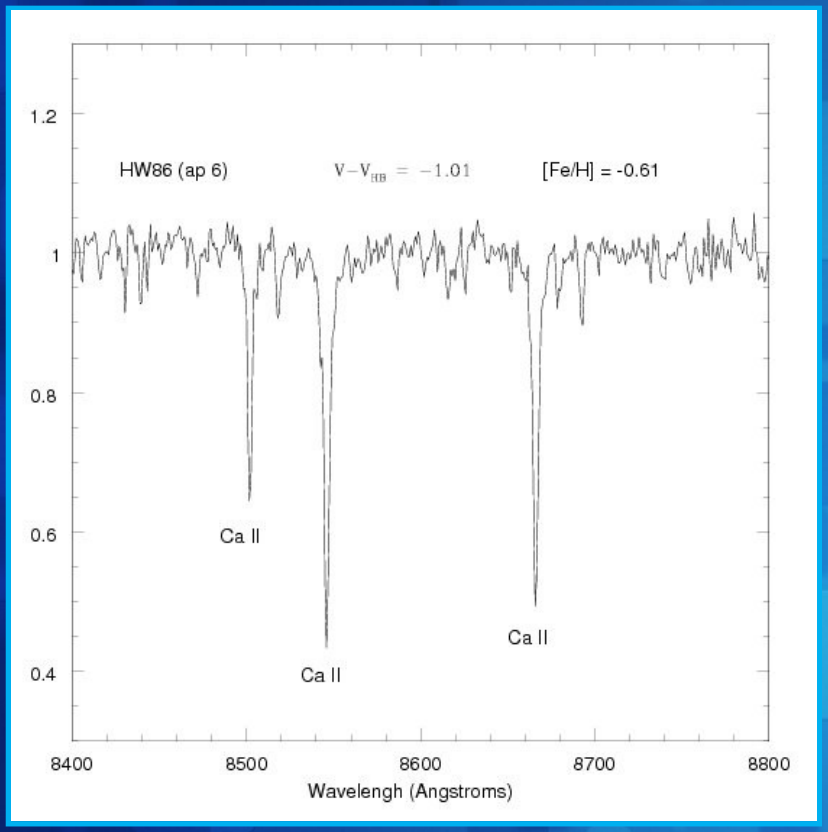
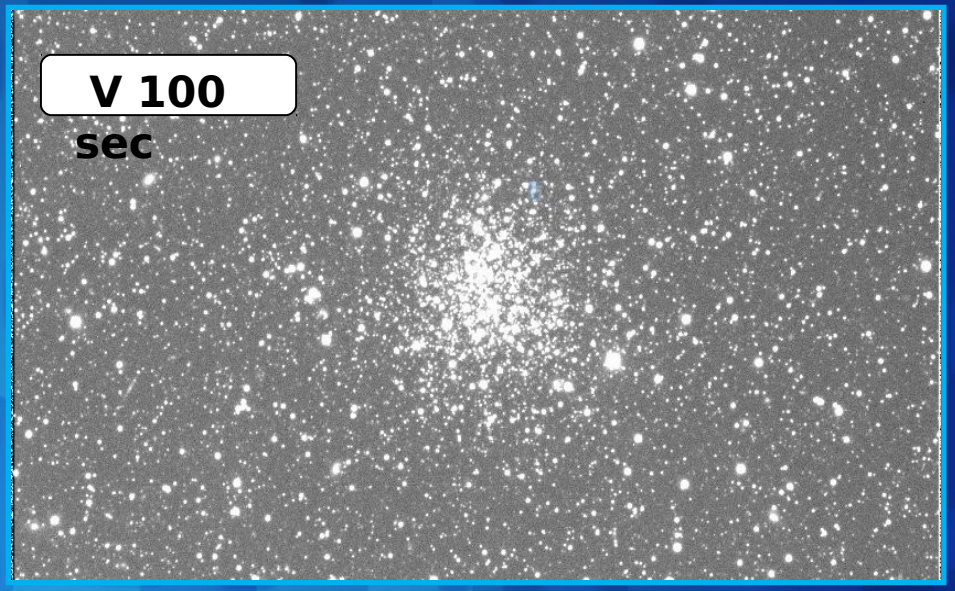
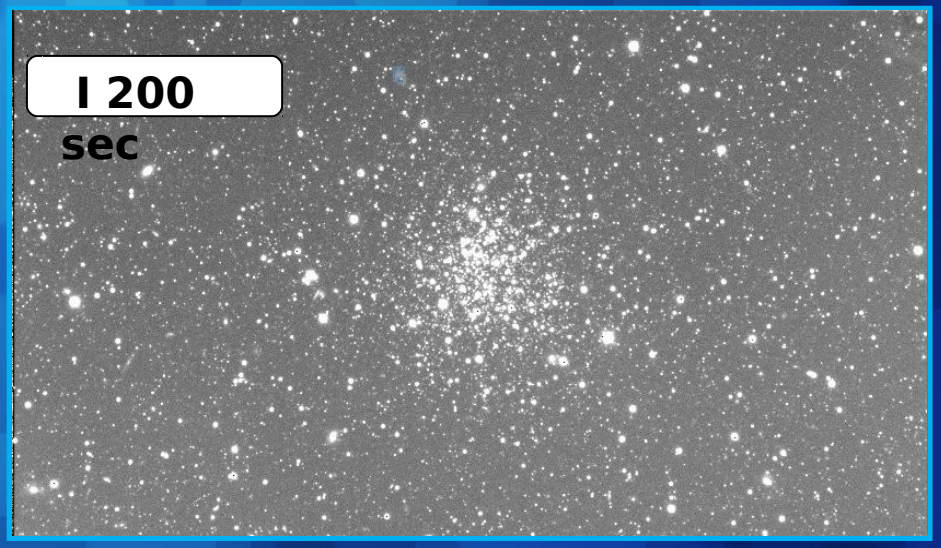
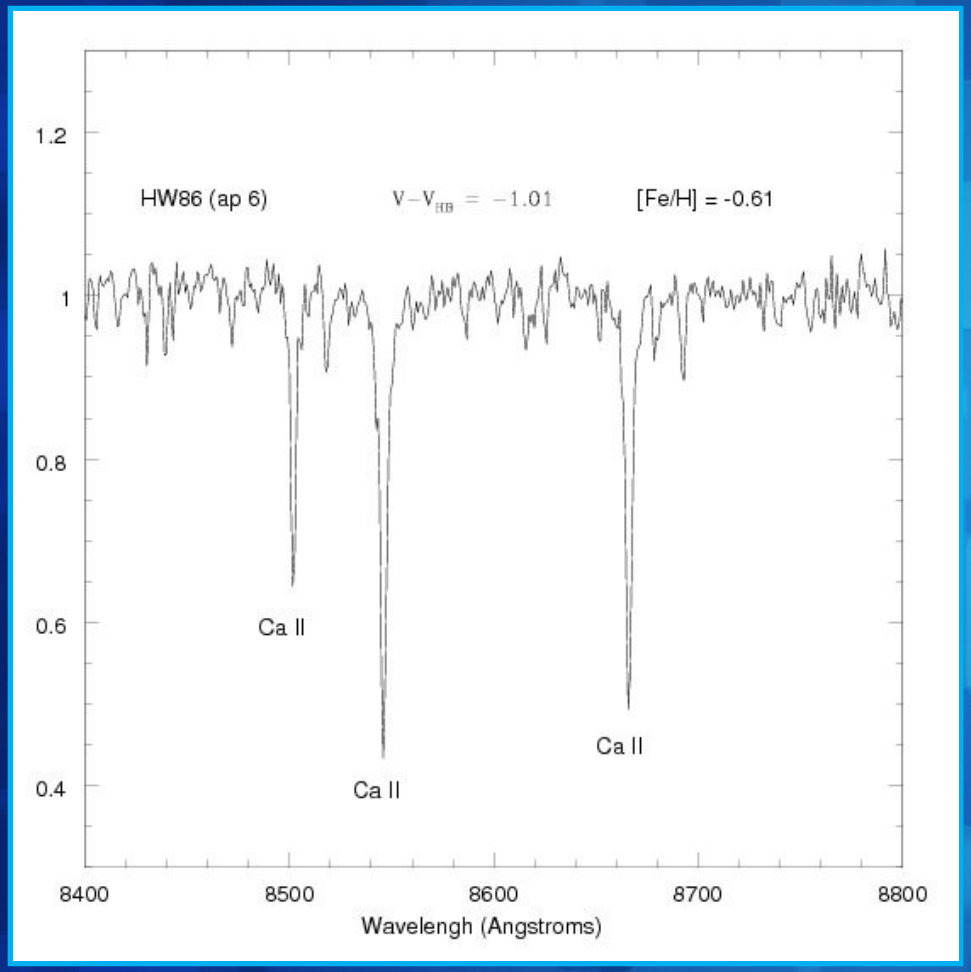
FORS2 (VLT): 15 SMC star clusters







Dispersion: ~ 0.85 Å/pixel
Resolution: 2-3 Å
Spectral range: ~ 1600 Å
S/N: ~ 30

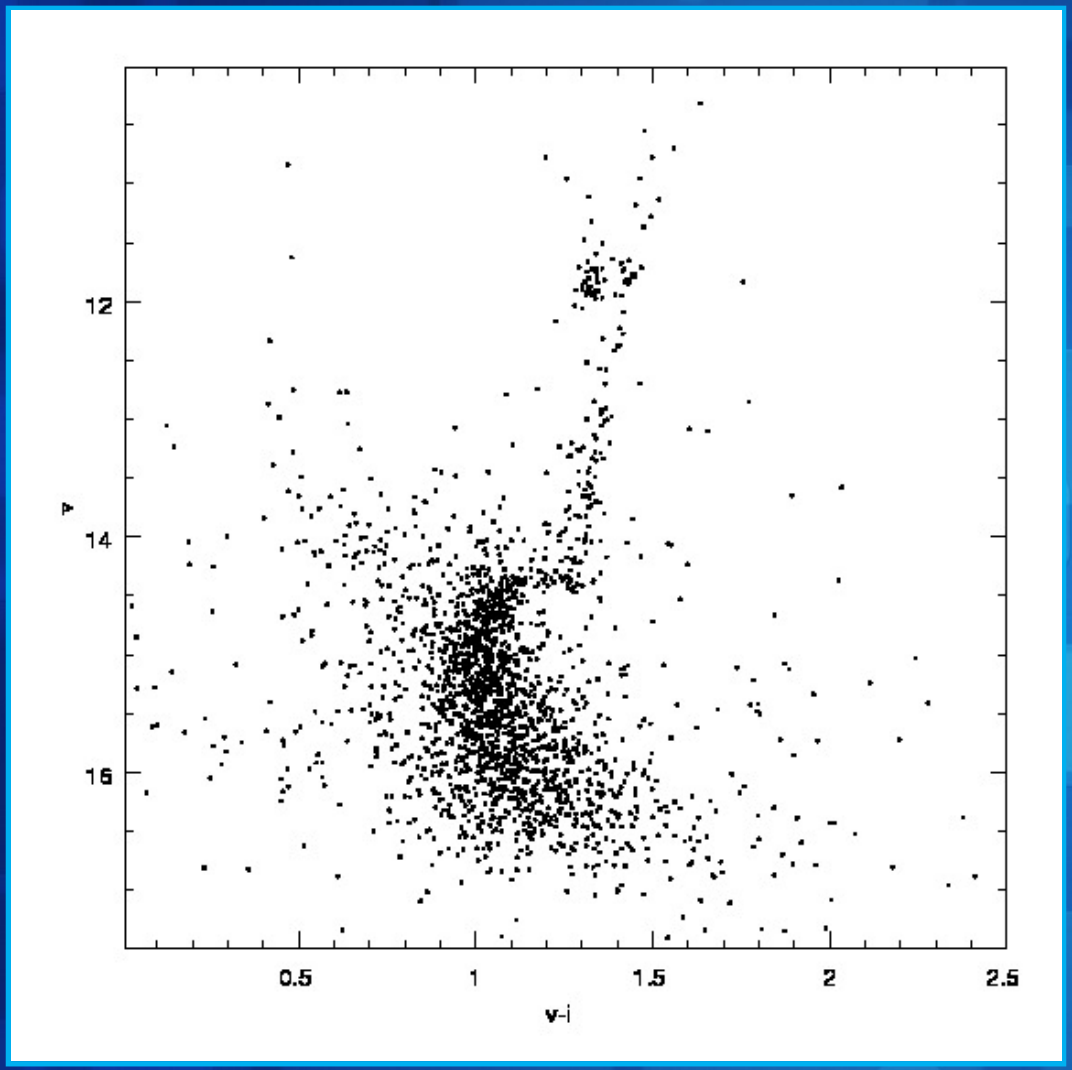


Ca II Triplet (CaT)
λs = 8498 Å, 8542 Å and 8662 Å
+
Cole et al. (2004)

Metallicity of cluster red giants

Cluster mean metallicities to 0.05 dex from an average of 6.4 member per cluster.

Parisi et al. (2009), AJ, 138, 517



δV
+
Carraro & Chiosi (2004)

Cluster ages

Parisi et al. (2013, AJ, submitted)

New CaT data for
15 SMC clusters

We have preliminary results about their metallicities

We are in the process of obtaining ages

Total sample:

30 SMC clusters with metallicities on a homogeneous scale

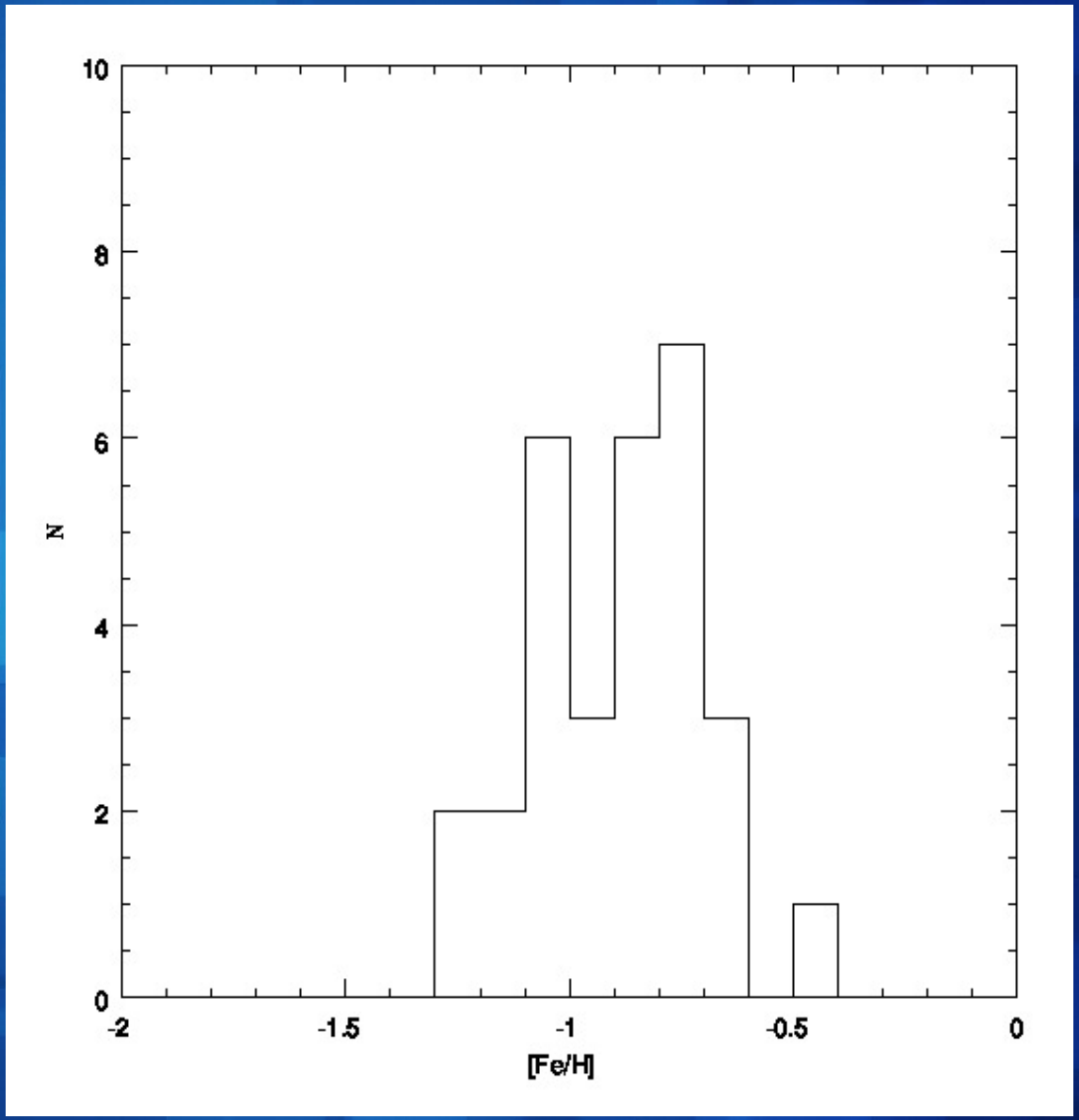
The larger and more accurate sample

15 of them with ages recently determined homogeneously

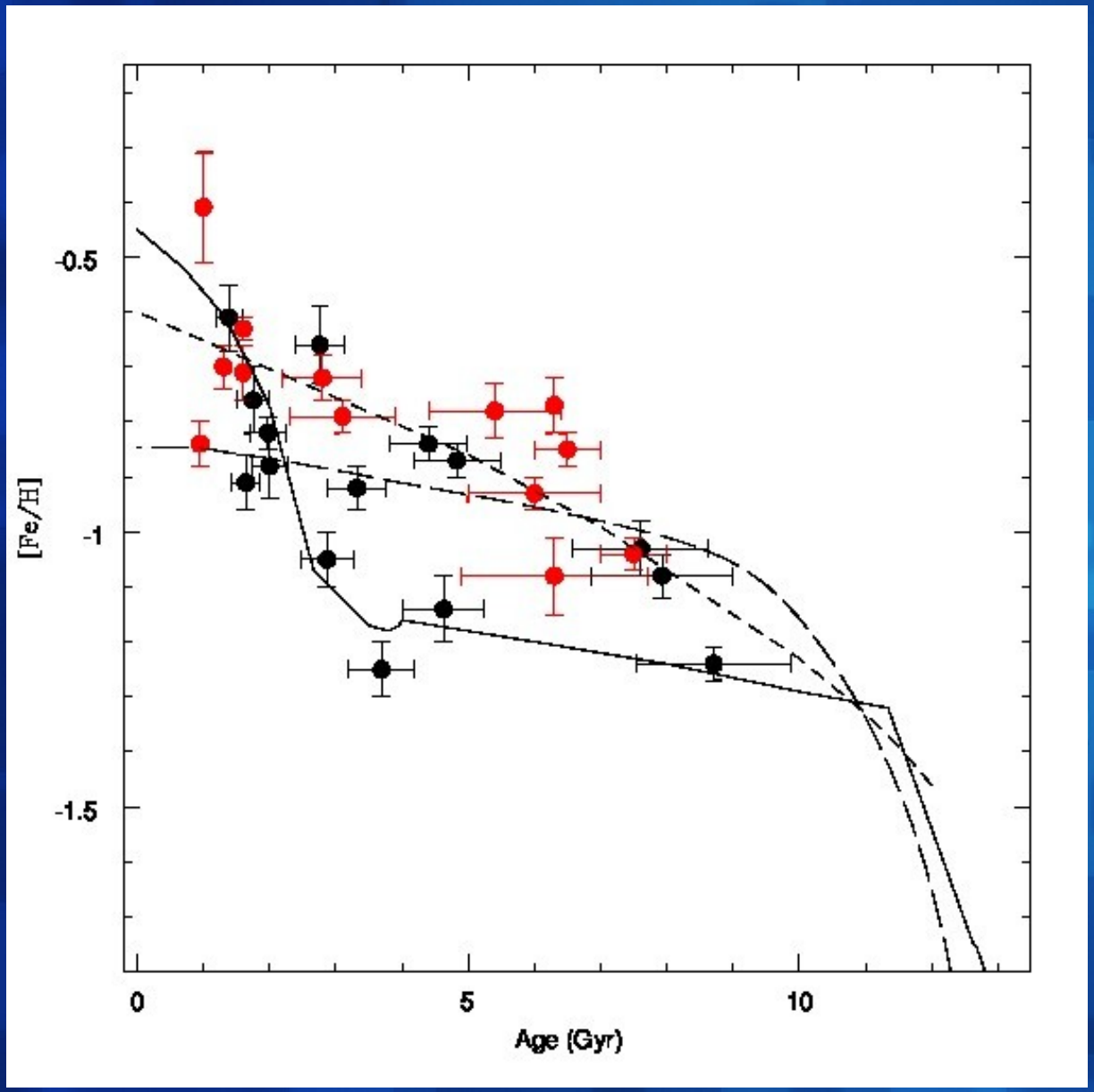
METALLICITY DISTRIBUTION

Our mean [Fe/H]= -0.9

Carrera et al. (2008)
global mean [Fe/H]= -1



AGE-METALLICITY RELATION



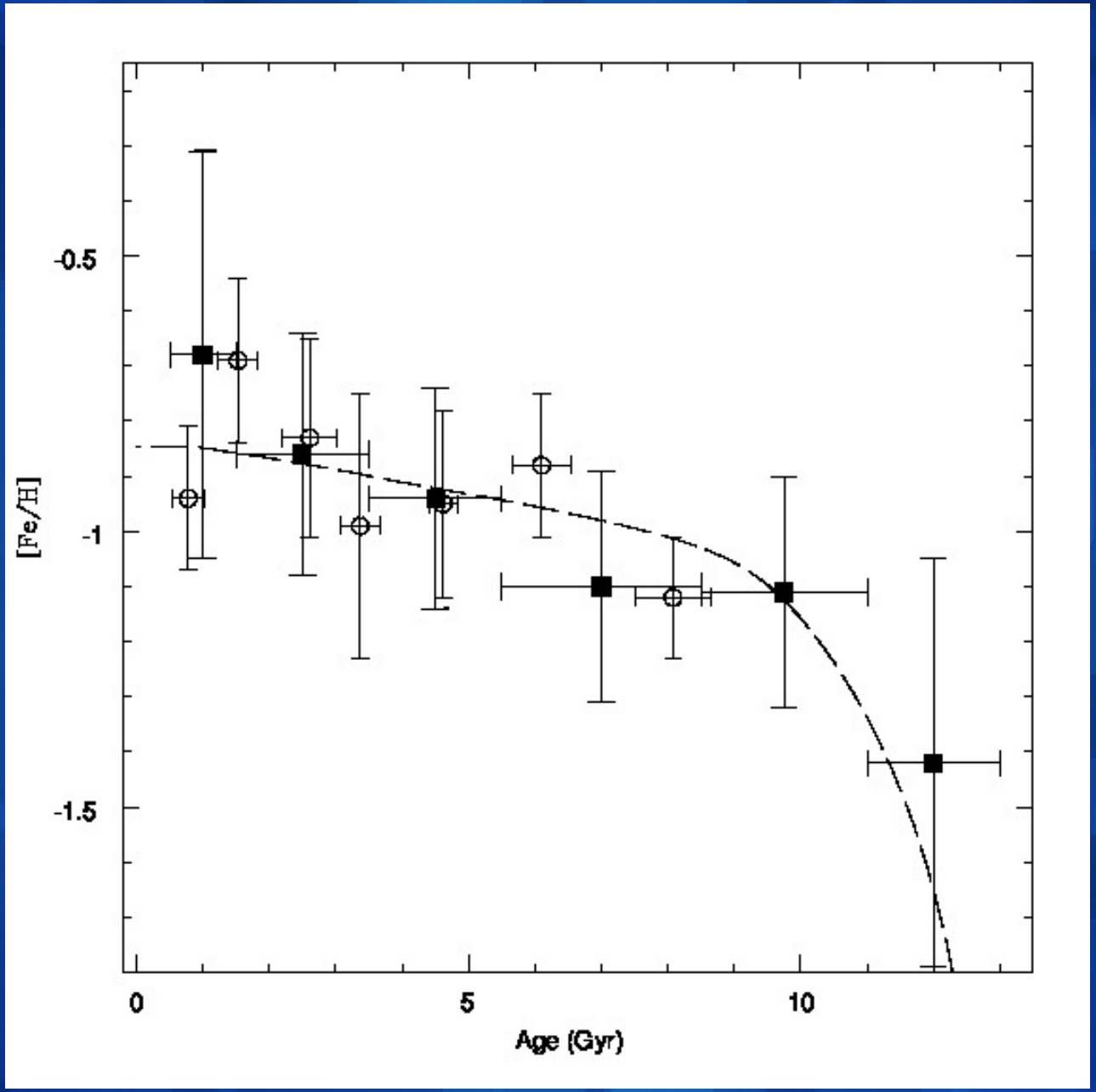
Bursting Model
Pagel et al. (1998)

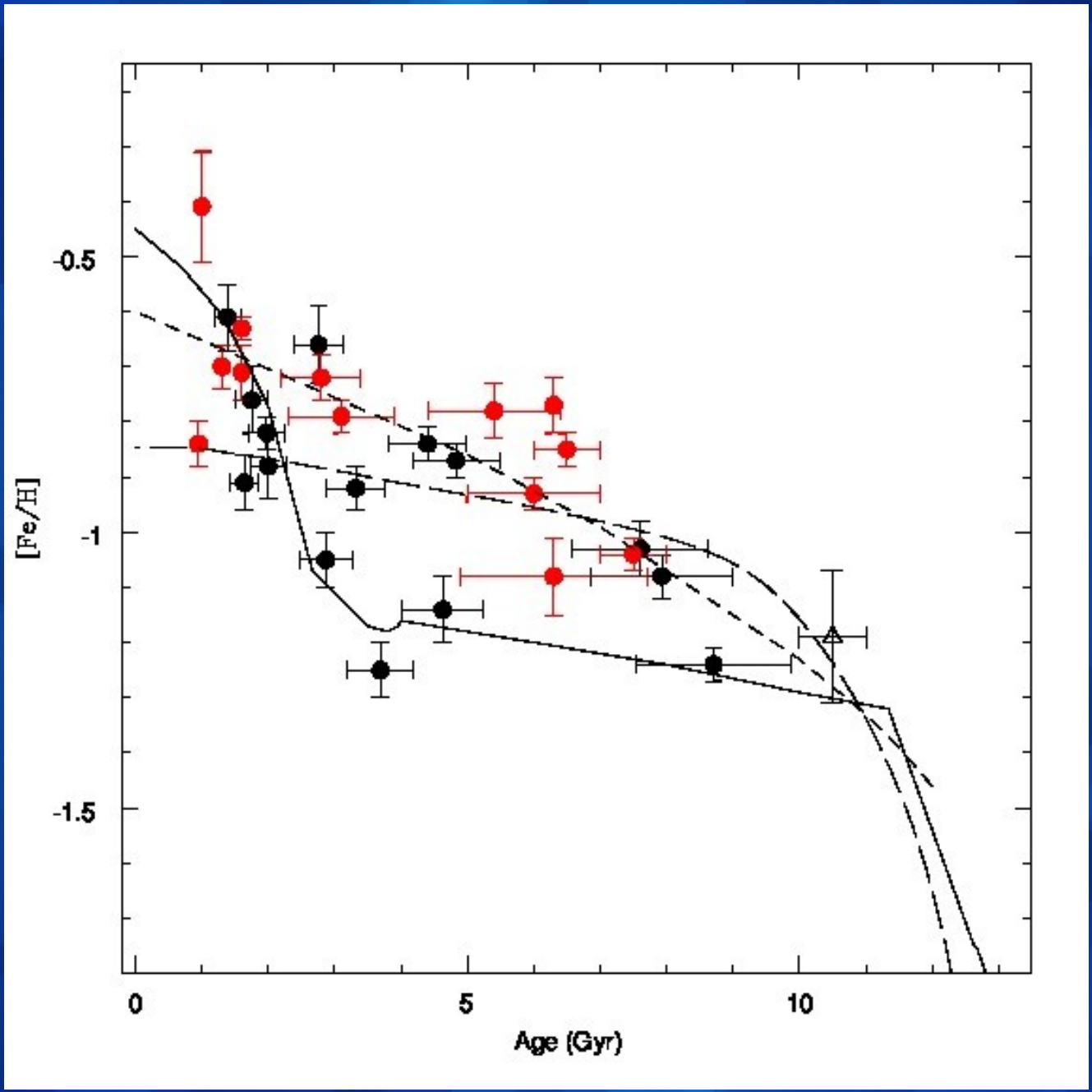
Simple Closed Box Model
Da Costa & Hatzidimitriou (1998)

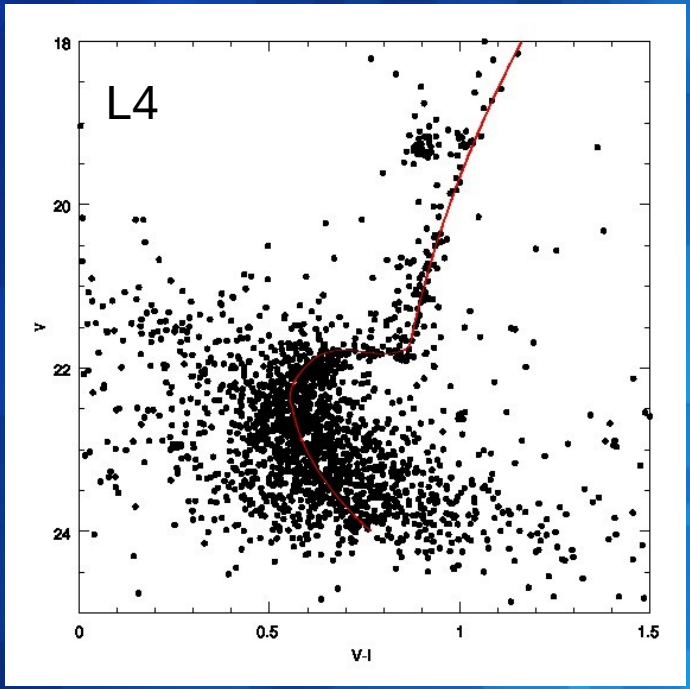
Field star model
Carrera et al. (2008)
Infall+outflow

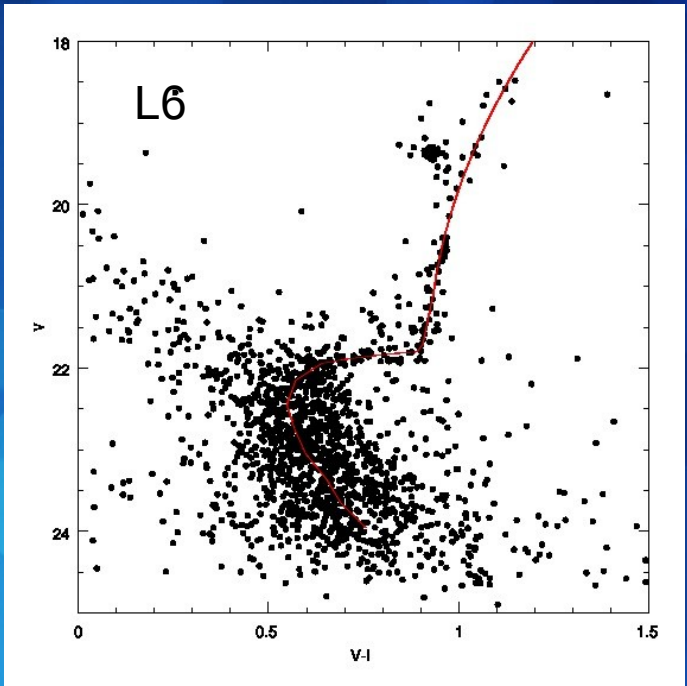
Our first set of 15 clusters

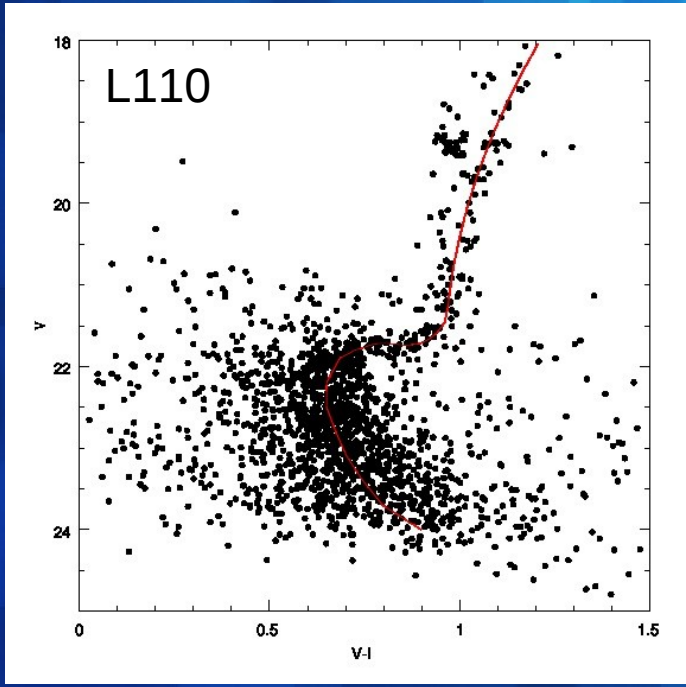
Our second set of 15 clusters


-0.5
-1
-1.5
[Fe/H]
0
5
10
Age (Gyr)


-0.5
-1
-1.5
[Fe/H]
0
5
10
Age (Gyr)







Parisi et al. (2013, AJ, submitted)

OLD SMC CLUSTERS

There may be old clusters in the SMC, but we need to find them.

It is absolutely neccesary to study SMC cluster with large telescopes to determine their ages with a higher degree of certainty.

The age gap is not real.

THANK YOU VERY MUCH!!