The RR Lyrae Instability Strip in the Split Horizontal Branch Globular Cluster NGC 6569

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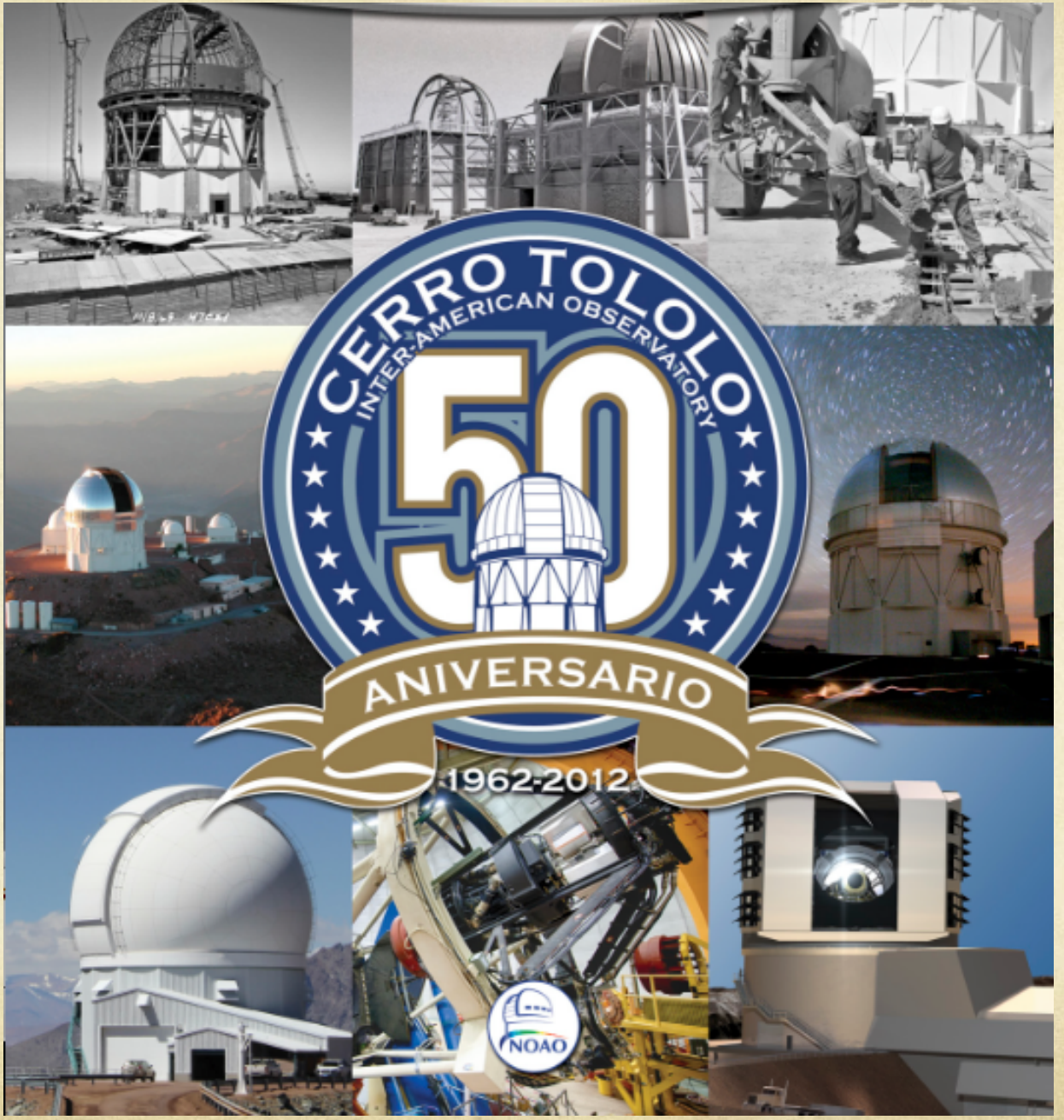
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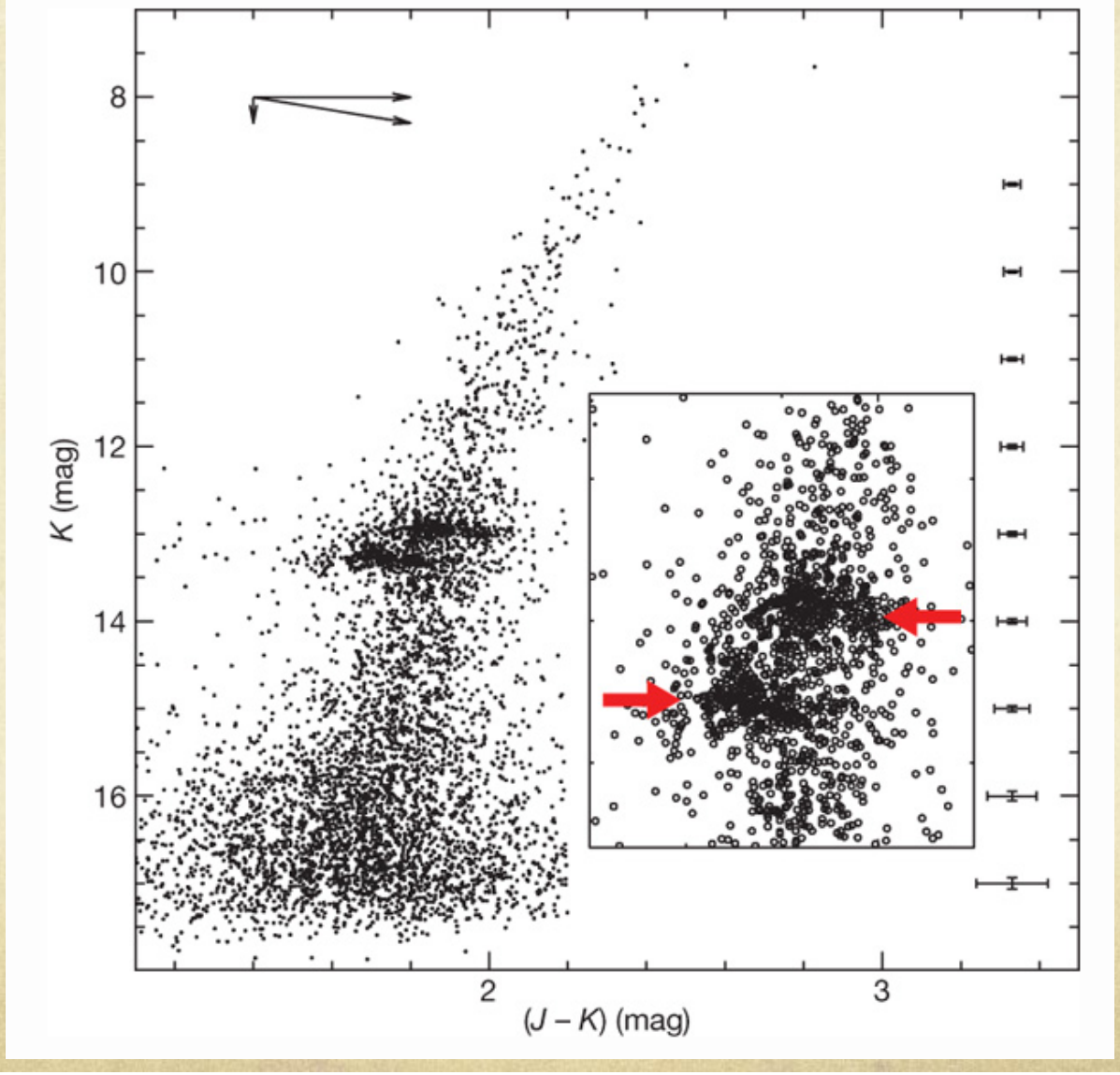
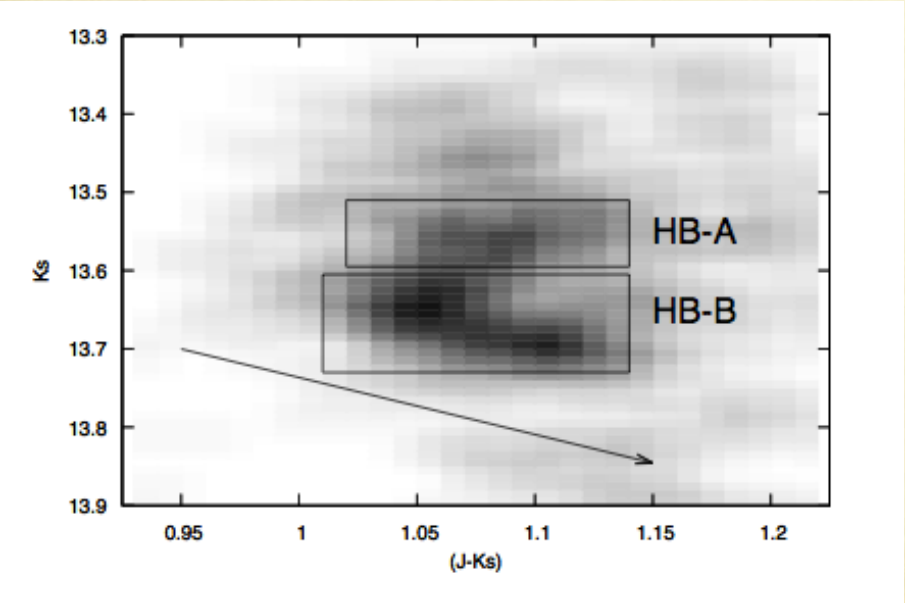


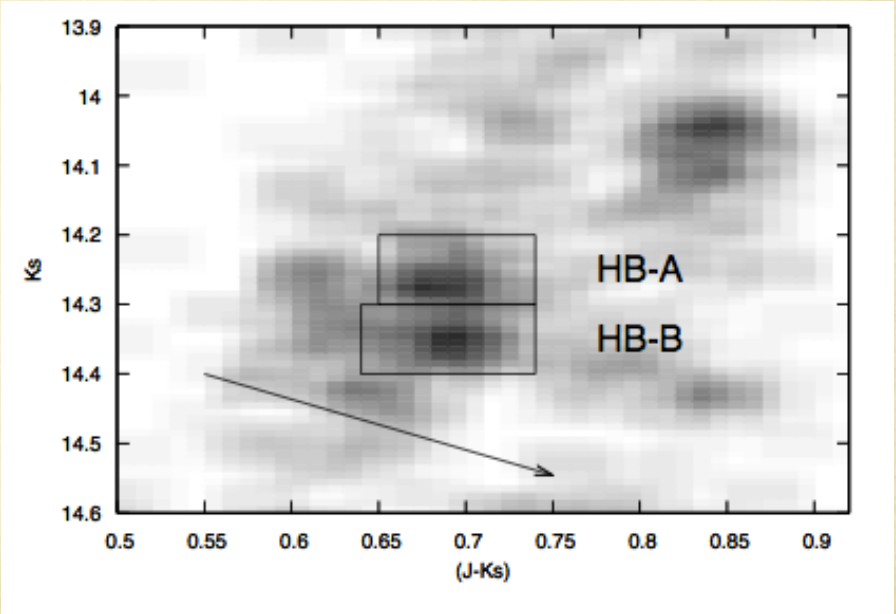
Ferraro et al. 2009

More GCs with double HBs

NGC 6440 CMD from the VVV



NGC 6569 CMD from the VVV



Mauro et al. 2013

RR Lyrae stars

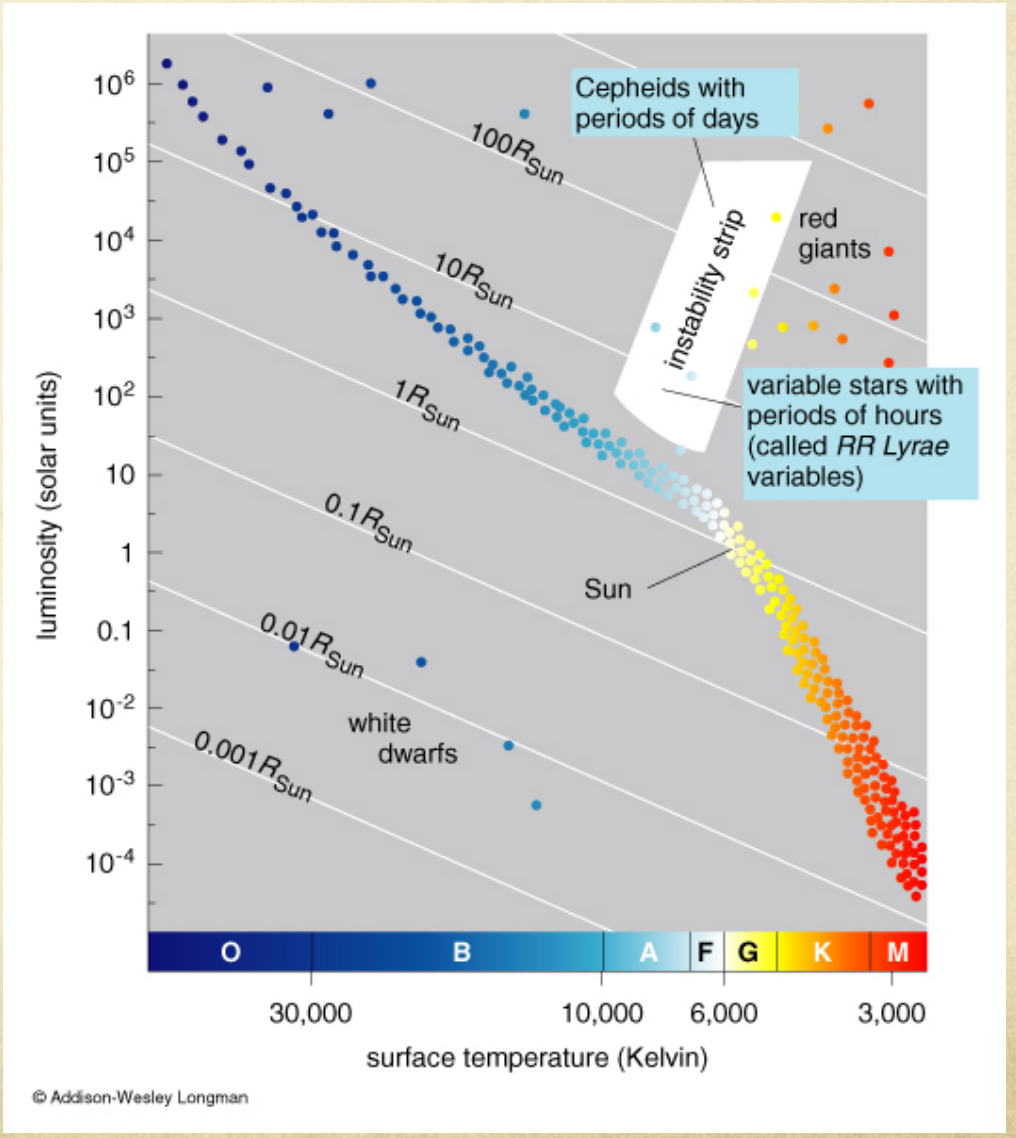
Periods: about 0.5 days (12 hrs)

Amplitudes: about 0.05 - 0.2 mag (optical filters)

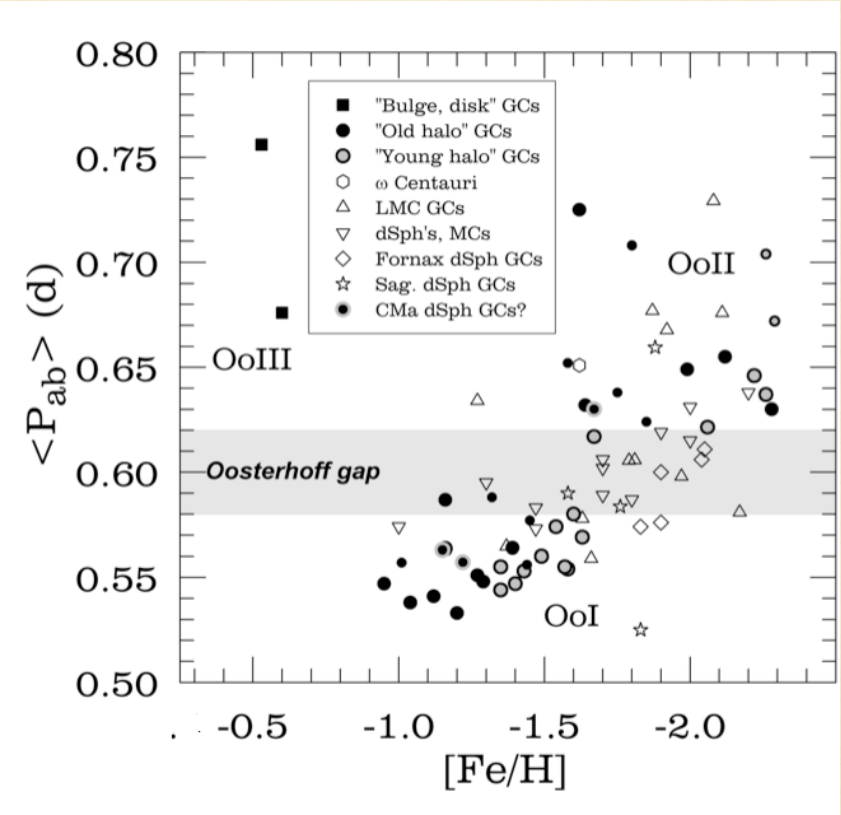
Light curve:
Saw tooth shape - easy to recognize, little contamination

Uniform absolute magnitude – powerful to determine distances

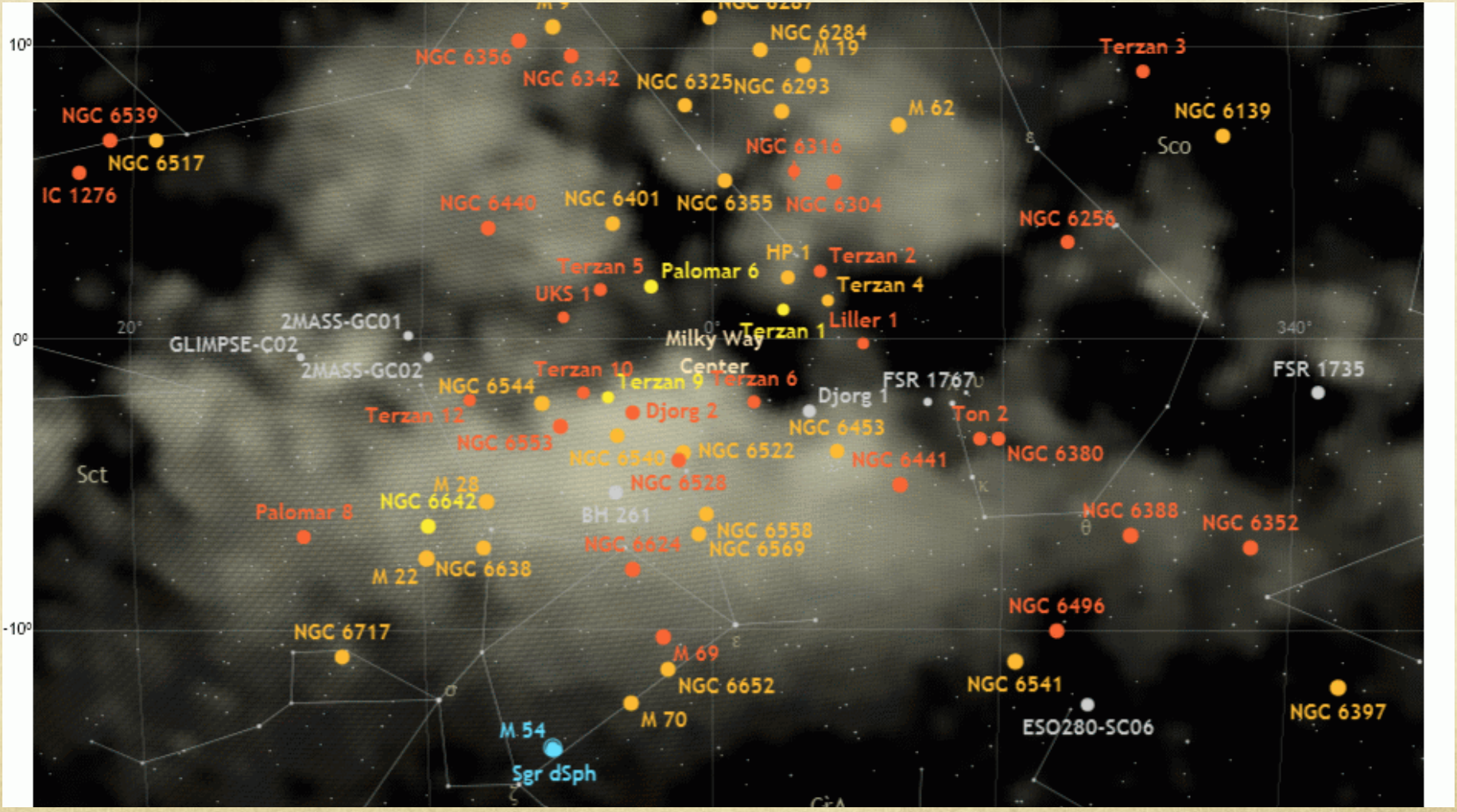
Pulsation properties – sensitive to He



RR Lyrae stars: Formation of Galaxy



Remnant fragment of Bulge?



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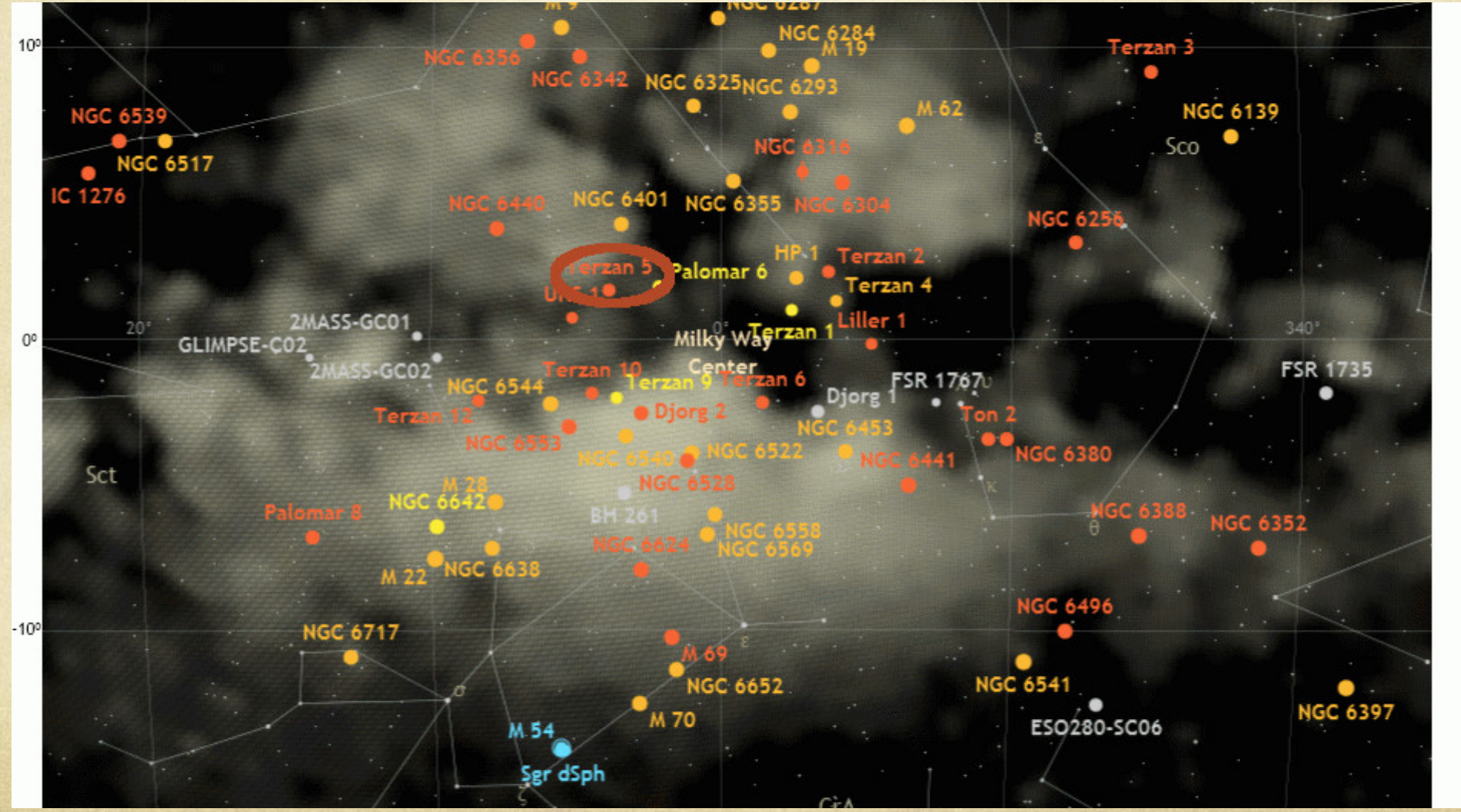

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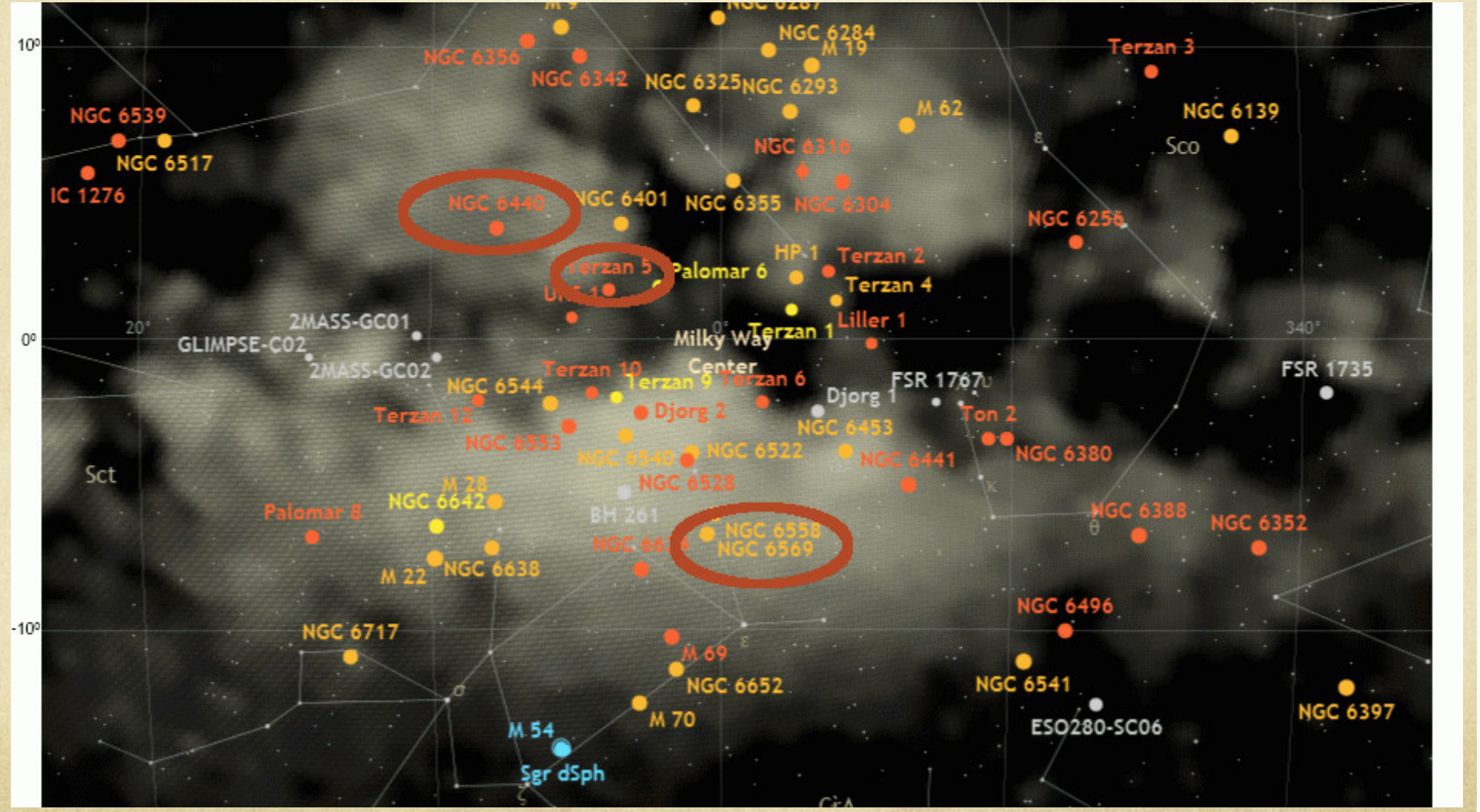
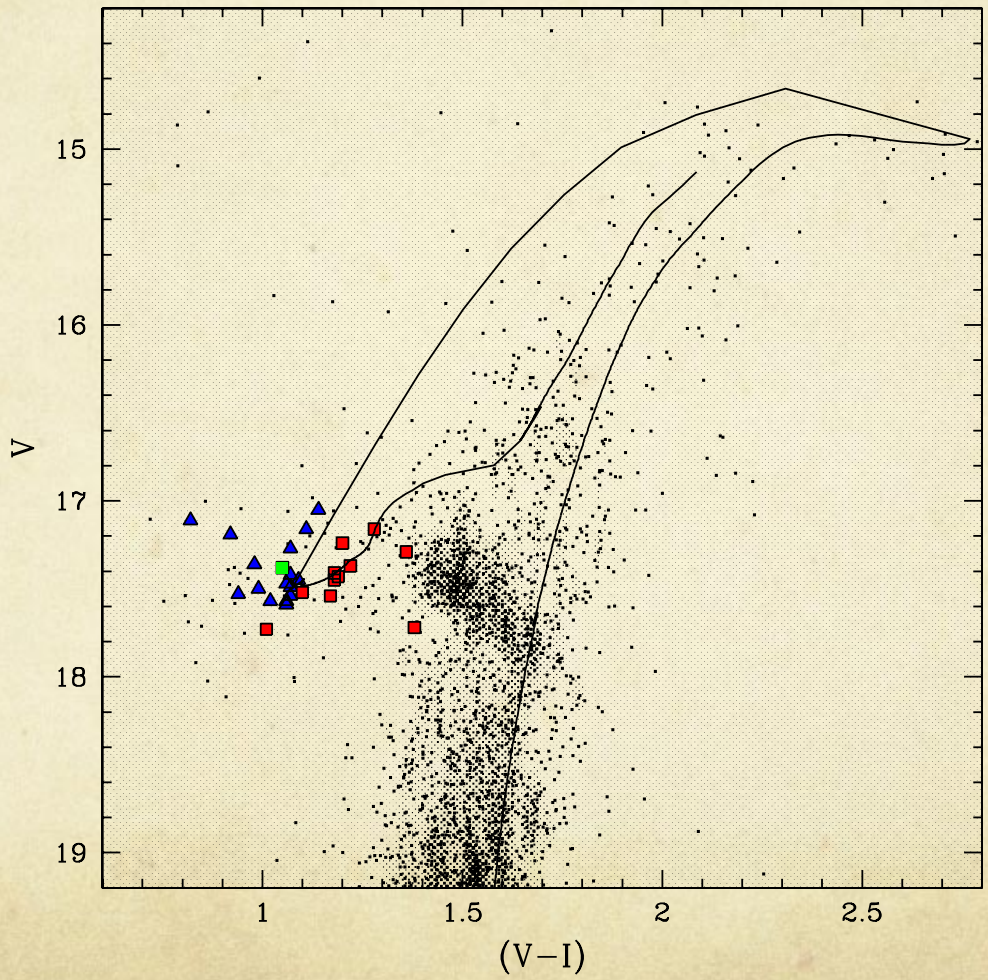
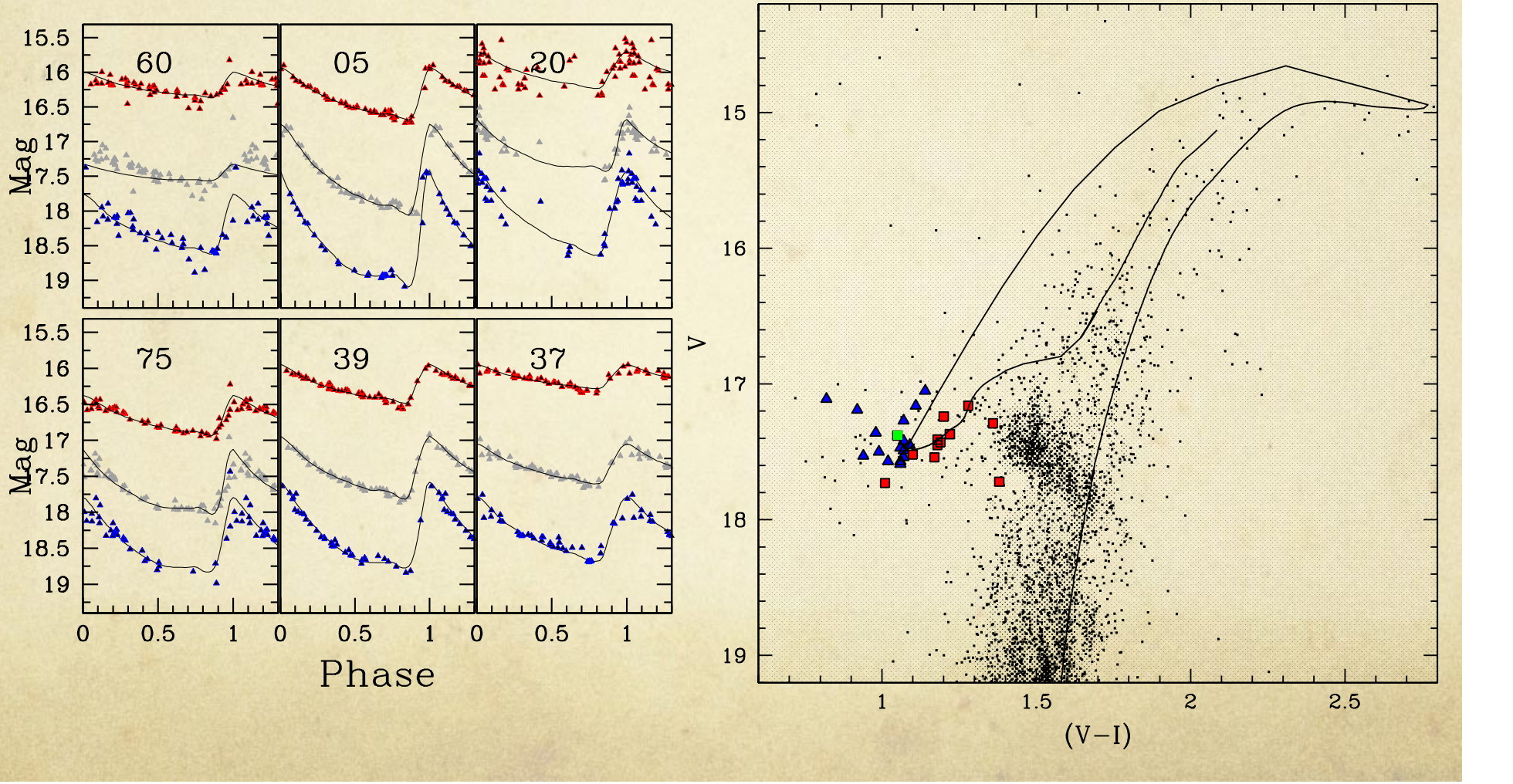


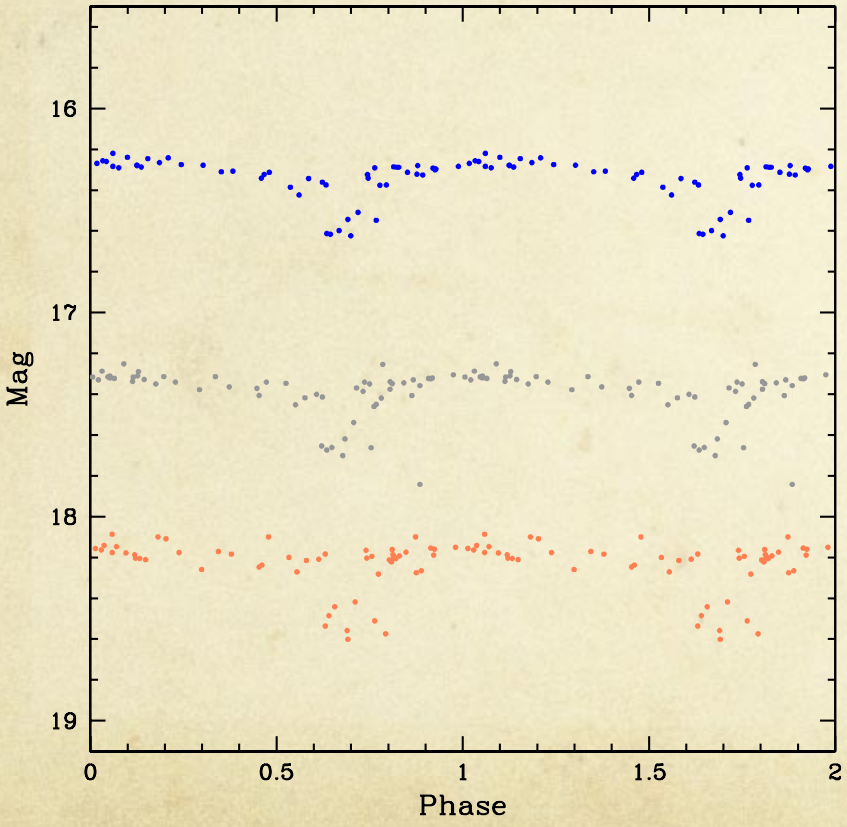
NGC 6569 optical CMD

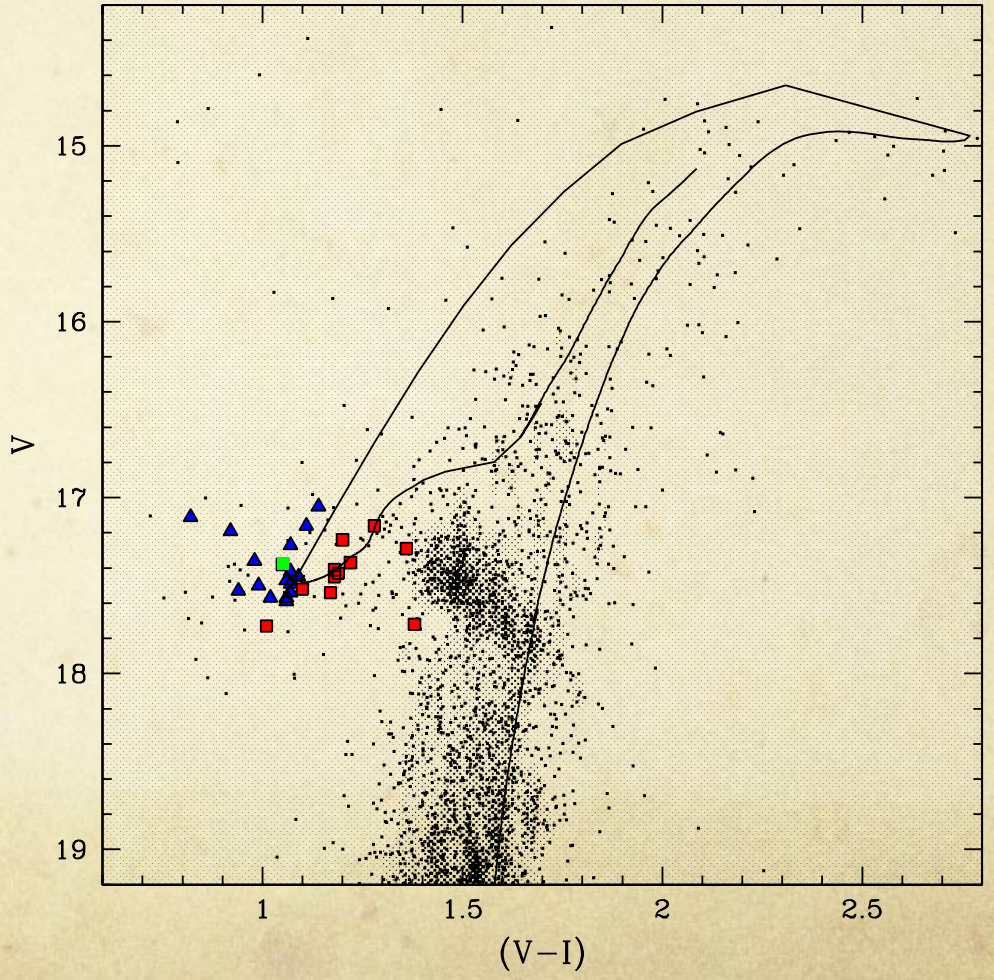


NGC 6569 optical CMD

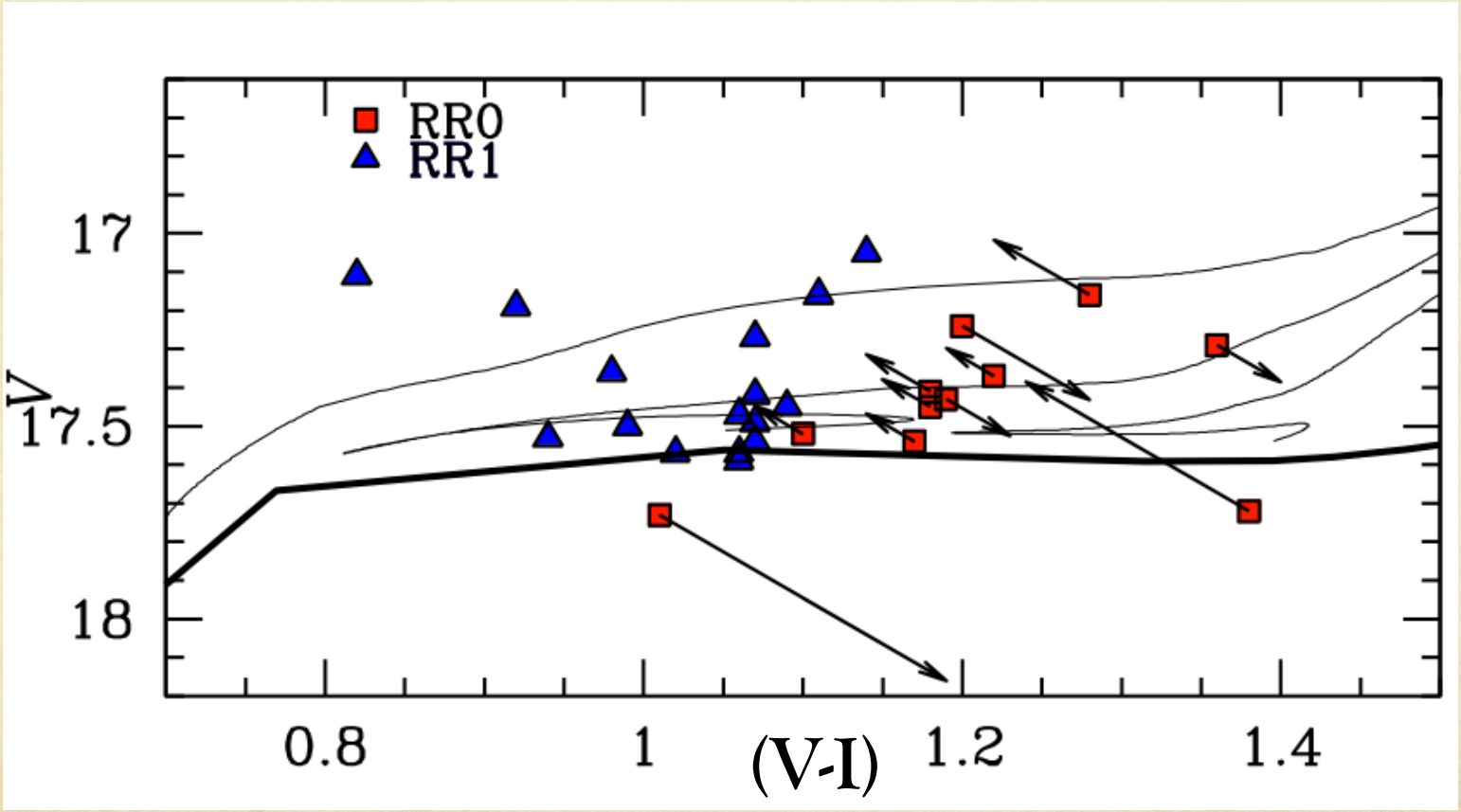


NGC 6569 optical CMD

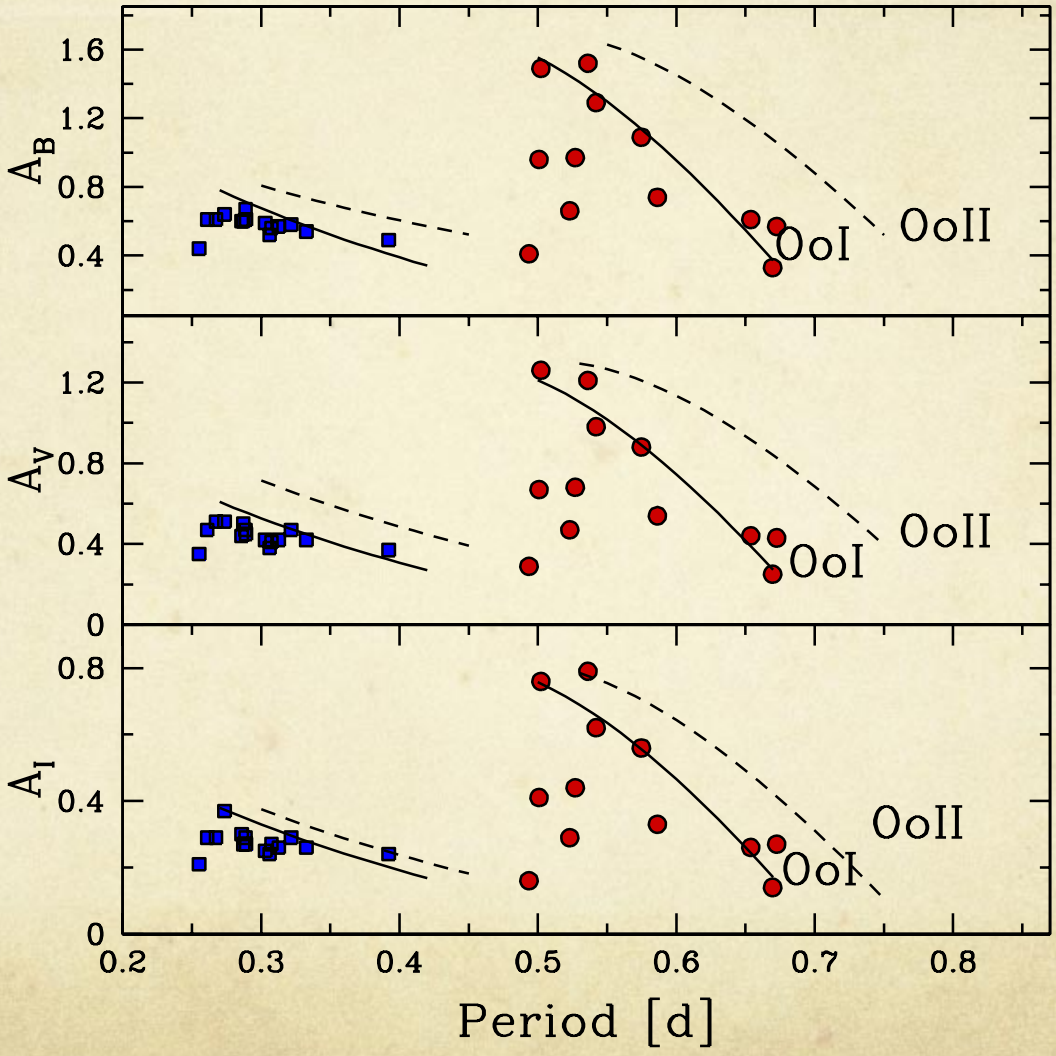




Instability Strip



Oosterhoff Group of NGC 6569



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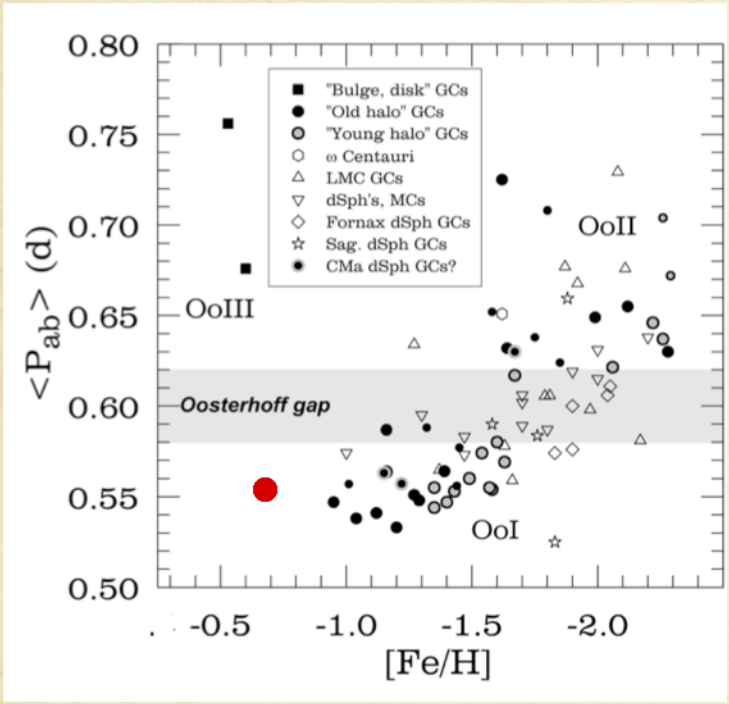
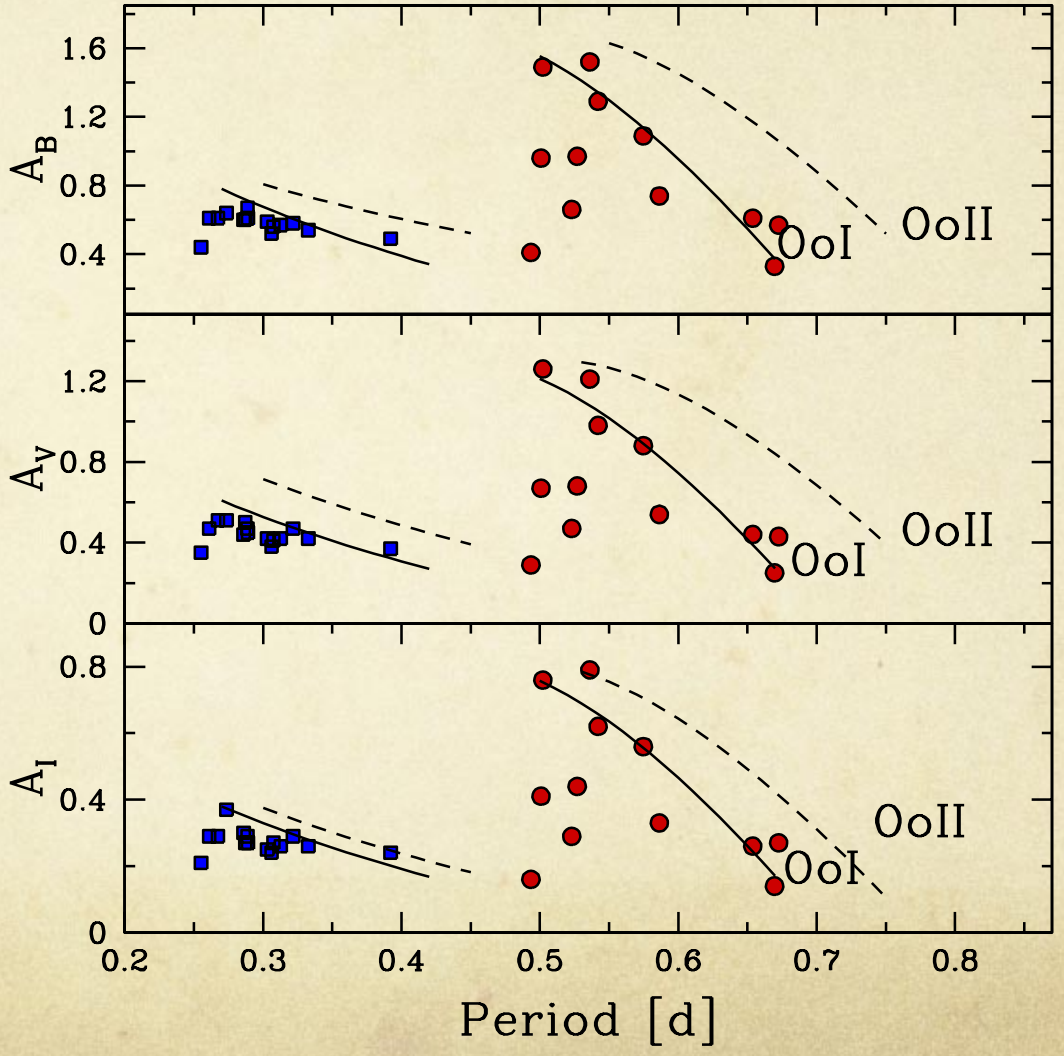
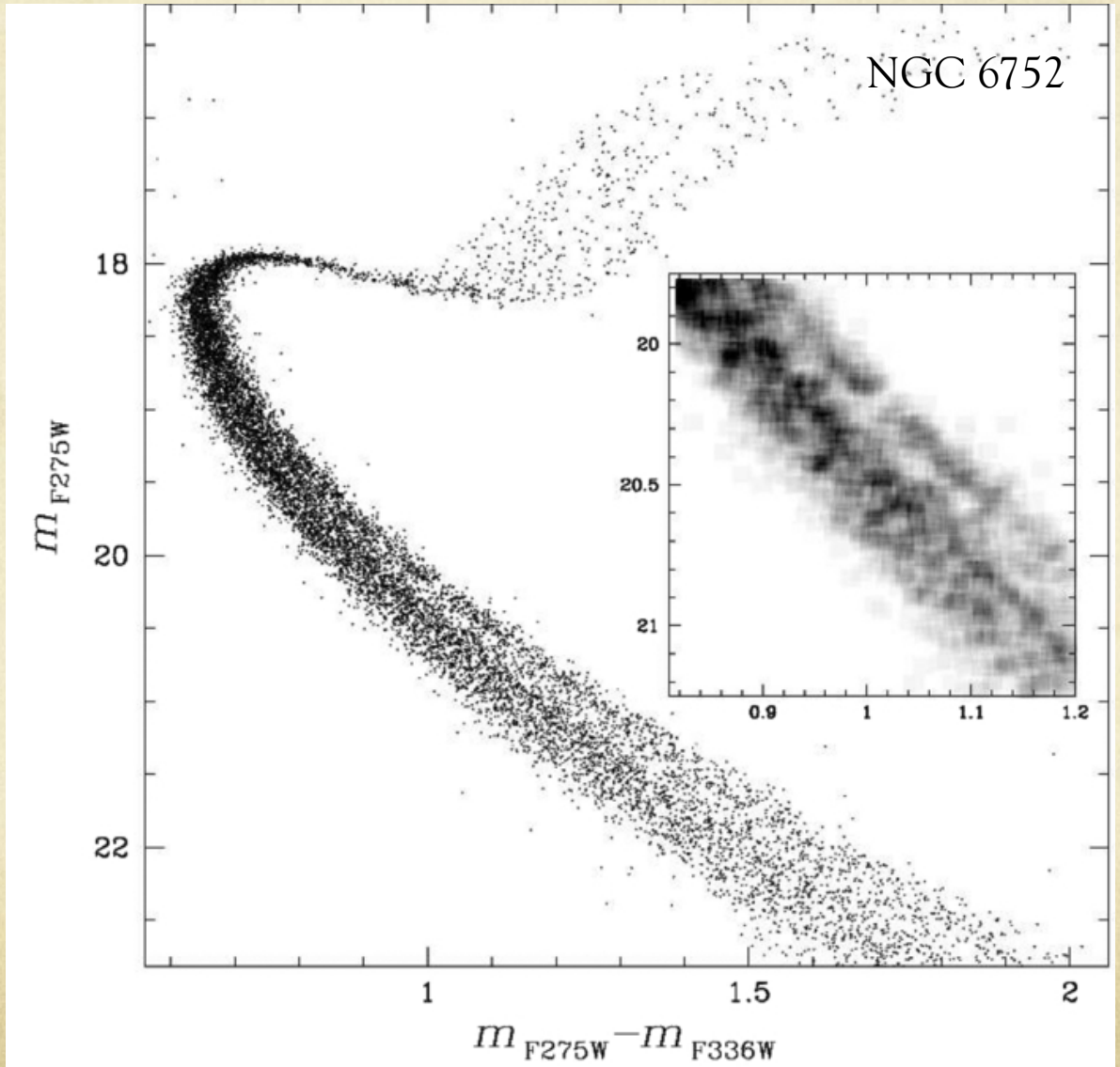




Results

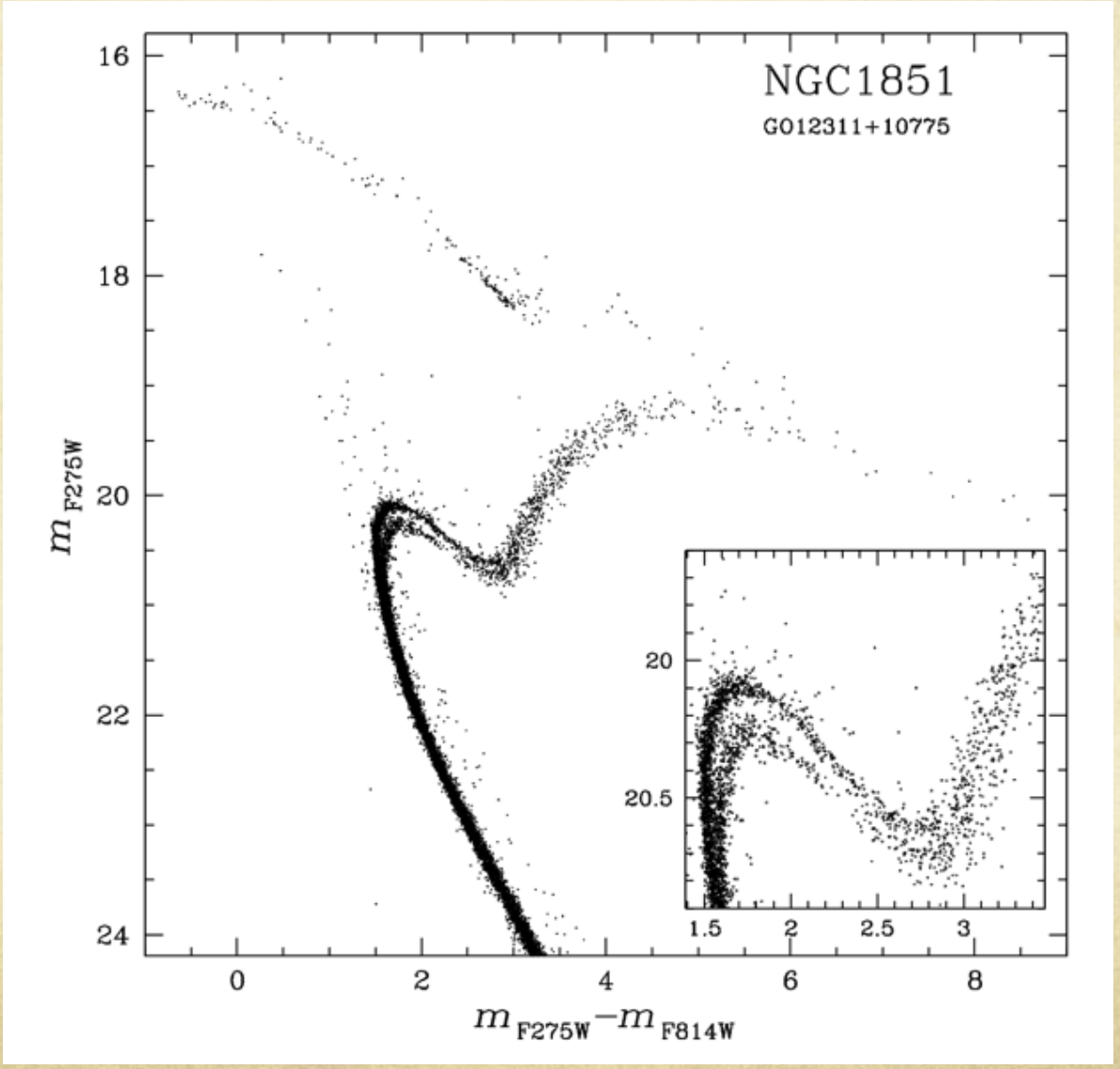
- No strong evidence of two RRL populations. Formations scenarios of this cluster have to explain why one of the HBs produced RRL and the other did not. Or how the two HBs formed two populations of RRL stars with such little difference in luminosities.
- NGC 6569 not like the other metal-rich Bulge clusters with RRL. Not much/any He enrichment?
- If NGC 6569 is not a GC, but a fossil remnant of the Bulge, it has characteristics different that GCs in dwarf spheroidal GCs
- Future work: closer look at models explaining its formation

Multiple Populations in GCs



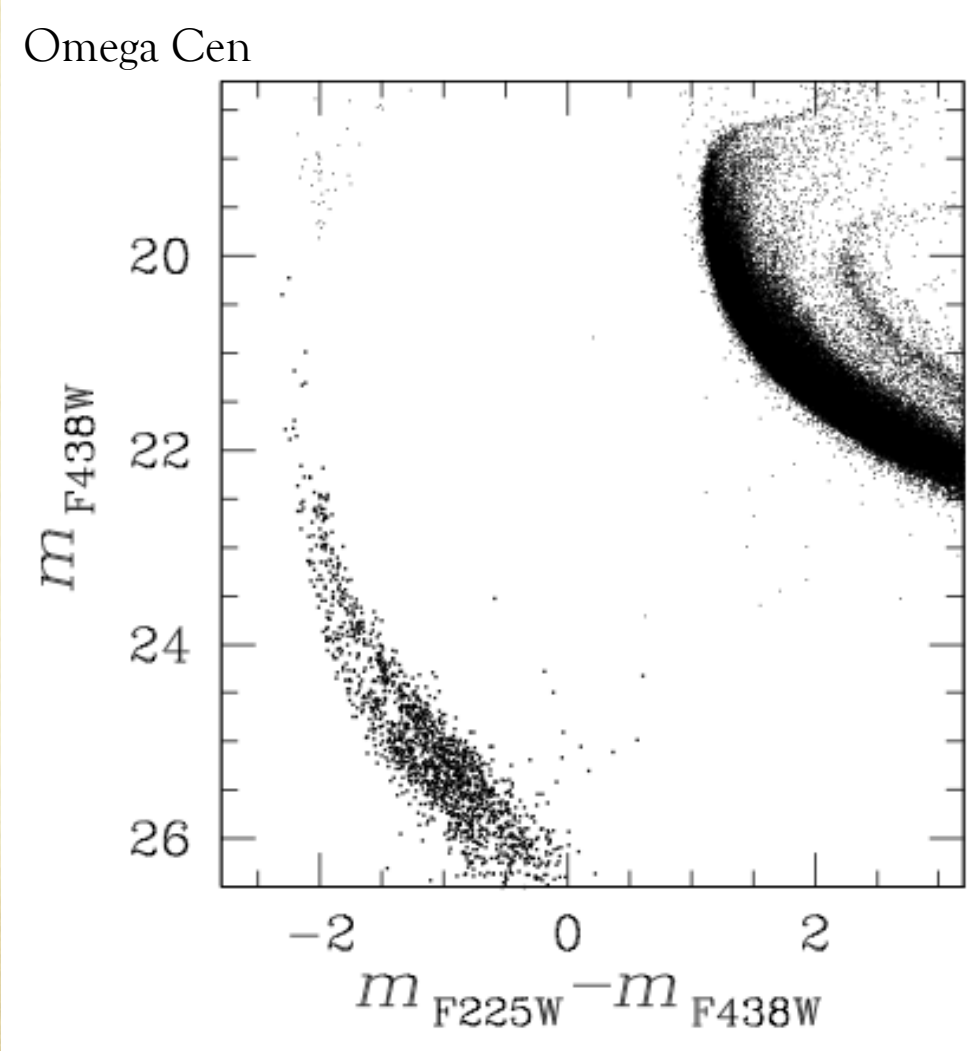
Milone et al. 2013

Multiple Populations in GCs

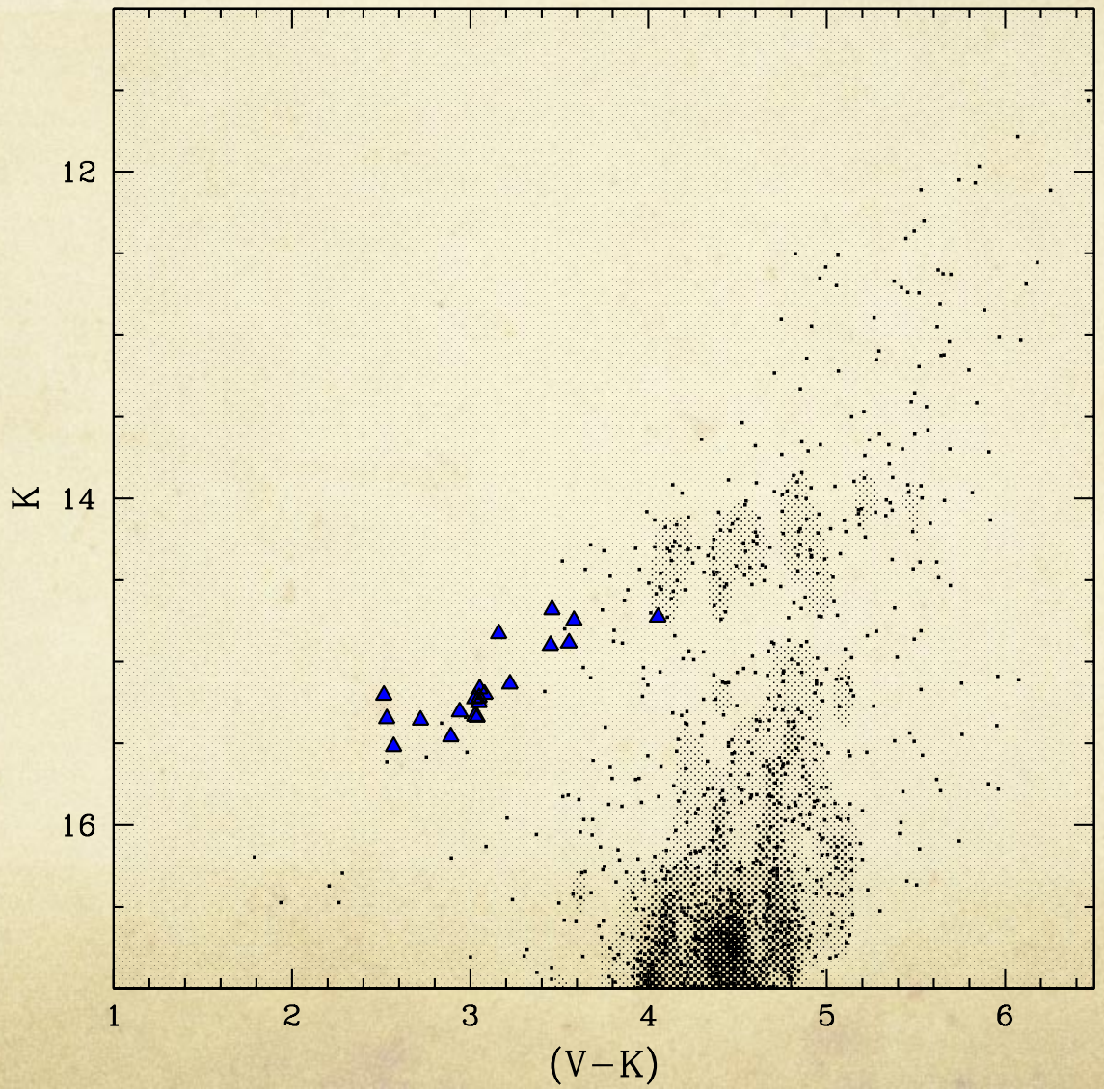


Piotto et al. 2011

Multiple Populations in GCs



Bellini et al. 2013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