

Extragalactic star clusters & stellar populations

Pauline Barmby, Western University



Western Science

A Richer Universe, Vancouver
May 2019

ASTRONOMY 302

1. Introduction to our Galaxy
2. Basic Concepts of Galactic Astronomy: Coordinate Systems, Parallax, Space Motions, Magnitudes and Colours, Spectra and Luminosity Classes, HR Diagrams, Colour-Colour Diagrams, Reddening, Distance Scale in the Galaxy
3. Brief Review of Stellar Evolution
4. Star Clusters
5. Stellar Populations and Formation of the Galaxy
6. Luminosity Function and Star Formation
7. Galactic Rotation and the Mass of the Galaxy
8. The Milky Way as a Member of the Local Group

REFERENCES

Sandage; ARAA 24, 421.
Gillmore et al; ARAA 27, 555.
Bok and Bok; The Milky Way Galactic Structure: ed by Blaauw (Chicago Series)
van den Bergh; JRAS 62, 145

Handwritten notes:

Handwritten notes on the right side of the collage include:

- $K_s = M_V / E(B-V)$
- calculating fit of $V-M_V$
- $R = 6.559$
- but I would r^2 (coefficient)
- (this was after 1)
- C-M diagram

Handwritten notes at the bottom include:

- A302 - Oct 9/92
- For I I said all our main sequence stars
- or thereabouts - there are very few He
- it can't be O or B, and few metal lines

Pauline Barmby



Michelle S. Phelps
@MichelleSPhelps

Follow

Professors: I spent the last 10 years of my life studying this topic.
Also Professors: I wrote this talk on the plane and have not practiced it once.

12:18 PM - 24 Apr 2019

881 Retweets 9,149 Likes



95 881 9.1K

Western Science

@PBarmby

Richer extragalactic highlights

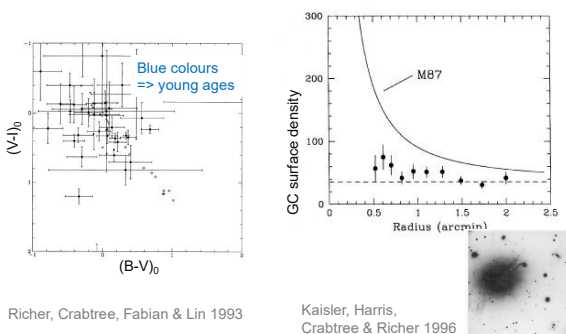
Star clusters: NGC 1275 & M31

The M31 stellar halo: HST and PAndAS

Western Science

@PBarmby

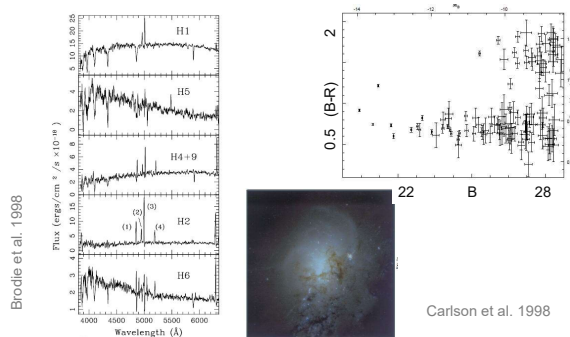
Star clusters in NGC 1275



Western Science

@PBarmby

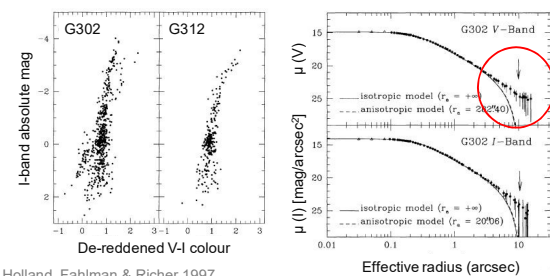
Star clusters in NGC 1275



Western Science

@PBarmby

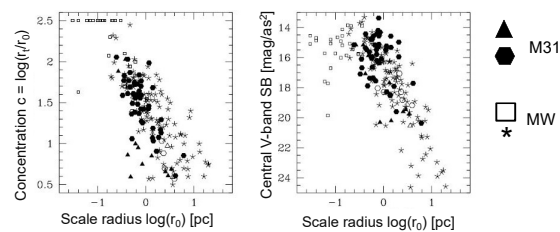
Resolving M31 globular clusters with HST



Western Science

@PBarmby

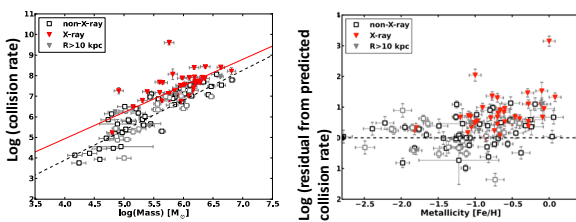
GC structures in M31 & MW



Western Science

@PBarmby

GC structures and XRBs

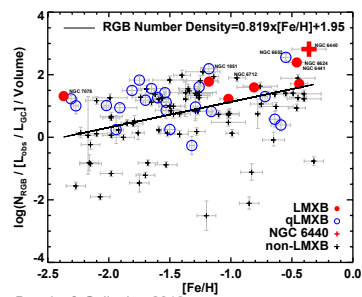


Agar & Barmby 2013

Western Science

@PBarmby

MW GC metallicity & XRBs



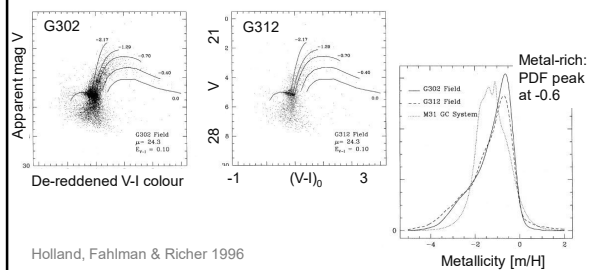
GCs with the largest RGB star density at a given metallicity are more likely to host LMXBs

Vulic, Barmby & Gallagher 2018

Western Science

@PBarmby

Multiple stellar populations in M31's halo with HST

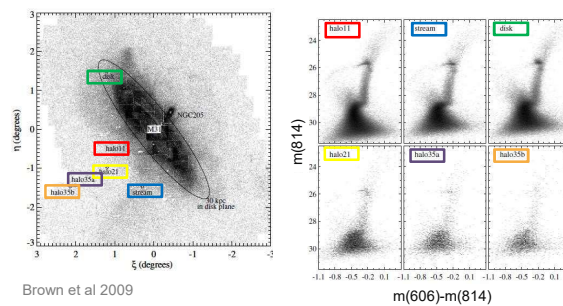


Holland, Fahlman & Richer 1996

Western Science

@PBarmby

M31 halo with HST

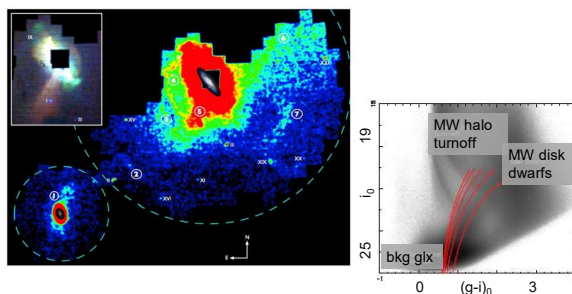


Brown et al 2009

Western Science

@PBarmby

The M31 halo and PAndAS

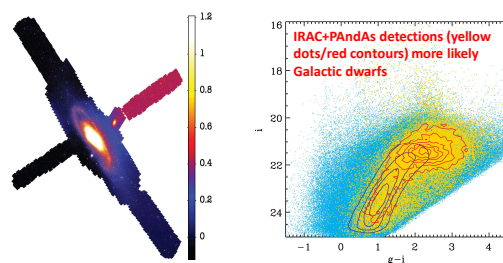


McConnachie et al (incl HBR, PB) 2009, McConnachie et al 2018

Western Science

@PBarmby

The M31 halo in the mid-IR



Rafiei Ravandi et al (incl HBR, PB) 2013

Western Science

@PBarmby

Other highly-cited work

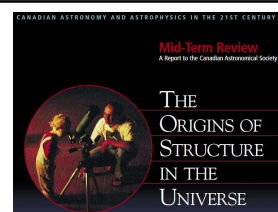
- [The double cluster G185 in M31](#) (HFR 1995)
- [Late-type stars in M31: AGB stars and metallicity gradients](#) (Brewer, Richer & Crabtree 1995)
- [Late-type stars in M31: C, S, M spectra](#) (BRC 96)
- [GCs in Fornax](#) (Oh, Lin & Richer 2000)
- [Carbon stars in M33](#) (Rowe, RBC, 2005)
- [Density variations in the NW star stream of M31](#) (Carlberg et al 2011)

Western Science

@PBarmby

MTR2005

- VLOT: support detailed design phase of TMT, join TMT
- OIR: Gemini queued observing, continue w/ CFHT
- SKA: continue with CLAR, participate in construction
- ALMA: band 3, fund operations, maintain NRC expertise
- space: JWST; strengthen ties with CSA; study long-term space needs
- other: leave JCMT, continue CGPS, support DAO, review data & computing, upgrade HPC



Western Science

@PBarmby

LRP2020

March 1, 2019	Call for white papers
March 1, 2019	Call for CASCA committee reports
April 15, 2019	Due date for expressions of interest for white papers
May 31, 2019	Due date for initial CASCA committee reports
June 2019	LRP2020 info session, CASCA annual meeting, Montréal
June 2019	Announce dates and locations for community town halls
Sep 30, 2019	Due date for white papers
Sep 30, 2019	Due date for final CASCA committee reports
Oct-Nov 2019	Community town halls (BC, AB, ON, QC)
March 31, 2020	Release of LRP2020 exposure draft
April 2020	Community discussions and webinars
May 2020	LRP2020 discussion, CASCA annual meeting, Toronto
September 2020	Final report in English
November 2020	Final report in French, final release of LRP2020

Western Science

@PBarnby

