New dSphs in the Virgo cluster core

S. Lieder\textsuperscript{1,2}, T. Lisker\textsuperscript{1}, M. Hilker\textsuperscript{3}, I. Misgeld\textsuperscript{4}, P. Durrell\textsuperscript{5}

\textsuperscript{1} Zentrum für Astronomie, Heidelberg, Germany
\textsuperscript{2} ESO Santiago
\textsuperscript{3} ESO Garching
\textsuperscript{4} Universitätssternwarte München
\textsuperscript{5} Youngstown State University, Youngstown, OH

Submitted to A&A: S. Lieder et al. „A deep view on the Virgo cluster core“
Galaxy clusters show a linear early type CMR

Virgo: Sabatini et al. (2005)

Hydra I: Misgeld et al. (2008)
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V- and I-band observations
Virgo cluster core (0.4 Mpc$^2$)

Exp. time: 30-50 min

Depth:
- $\mu_V = 26.5$ mag/arcsec$^2$
- $\mu_I = 25.2$ mag/arcsec$^2$

(1σ per 0.2" pixel)
CFH12k@CFHT issues

Data reduction: THELI (Erben et al. 2005)
visual selection in both bands independently

371 galaxies preselected (mainly early-type)

- diffraction spike (2 rejected)
- foreground star’s halo (5)
- merger signature (5)
- 'spiral' structure (27)
- 'dust' feature (11)
- matching object in both bands (5)
- center not imaged (3)
- unrobust fits (3)
- too small (9)
- small scale brightness fluctuations (5)

→ 296 galaxies investigated

$m_V = 18.6$

$m_V = 21.5$

$m_V = 19.1$
Virgo galaxies well separated from background galaxies

- $m - M = 31.09$ mag (Mei et al. 2007)
- $-900 \text{ km/s} < v < 2700 \text{ km/s}$ (Binggeli et al. 1993)
SFB criterion rejects possible cE

213 early type galaxies – 65 uncatalogued
Early type CMR shows different trend for dSphs

see also Ferrarese et al. (2006) and Laura's talk yesterday
Luminosity function as 'expected'

\[ \alpha = -1.32 \pm 0.04 \]

Late types: Meyer et al. (in prep)
Summary

➔ 65 new Virgo dSphs (77 VCC uncatalogued)

➔ CMR shows change in slope for dSph regime

➔ LF faint end slope $\alpha = -1.32$

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Selection criteria

Preselection

- Diameter larger ~10 arcsecs (Binggeli et al. 1985)
- No obvious spirals
- dIrrs with tolerable elliptical shape

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Bye eye selection in both bands independently

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Completeness

Ferrarese et al. (2006)
LF faint end slope uncertainty