

The Intrinsic Shape of Dwarf Spheroidals in the Virgo Cluster

Rubén Sánchez-Janssen
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Deconstructing Galaxies ESO Workshop
2013-11-19, Santiago, Chile

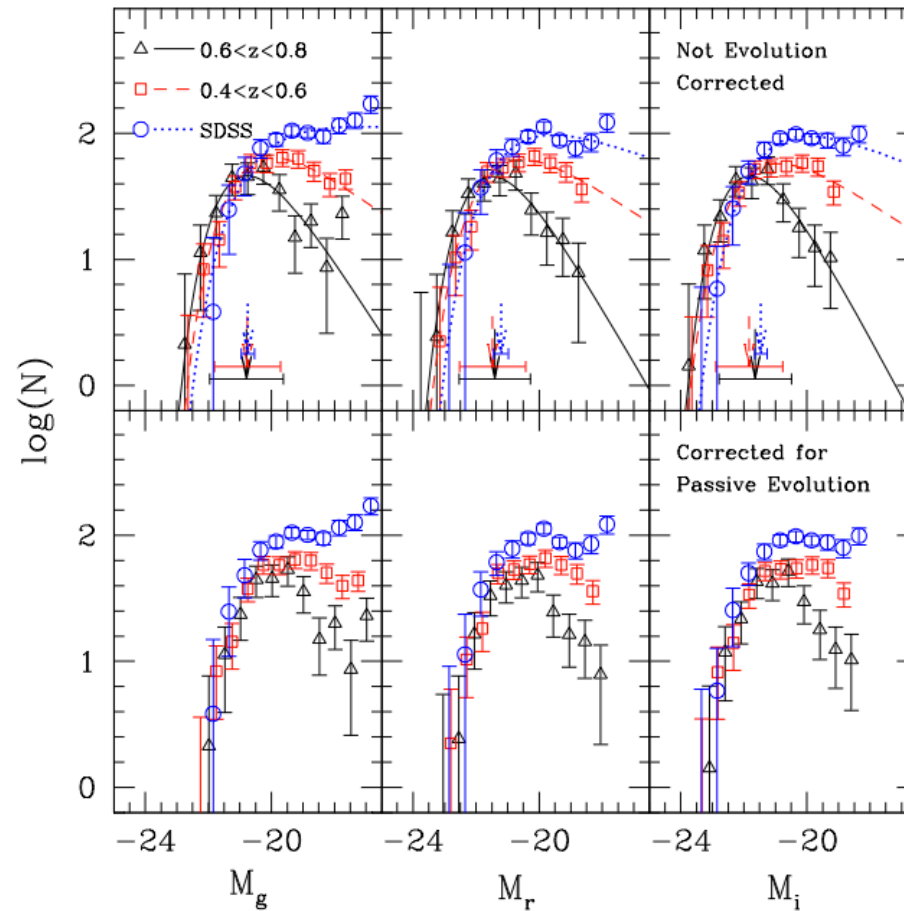
The Intrinsic Shape of Dwarf Spheroidals in the Virgo Cluster

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Laura Ferrarese, Pat Côté, and the NGVS team

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The red sequence progressively builds up at lower masses

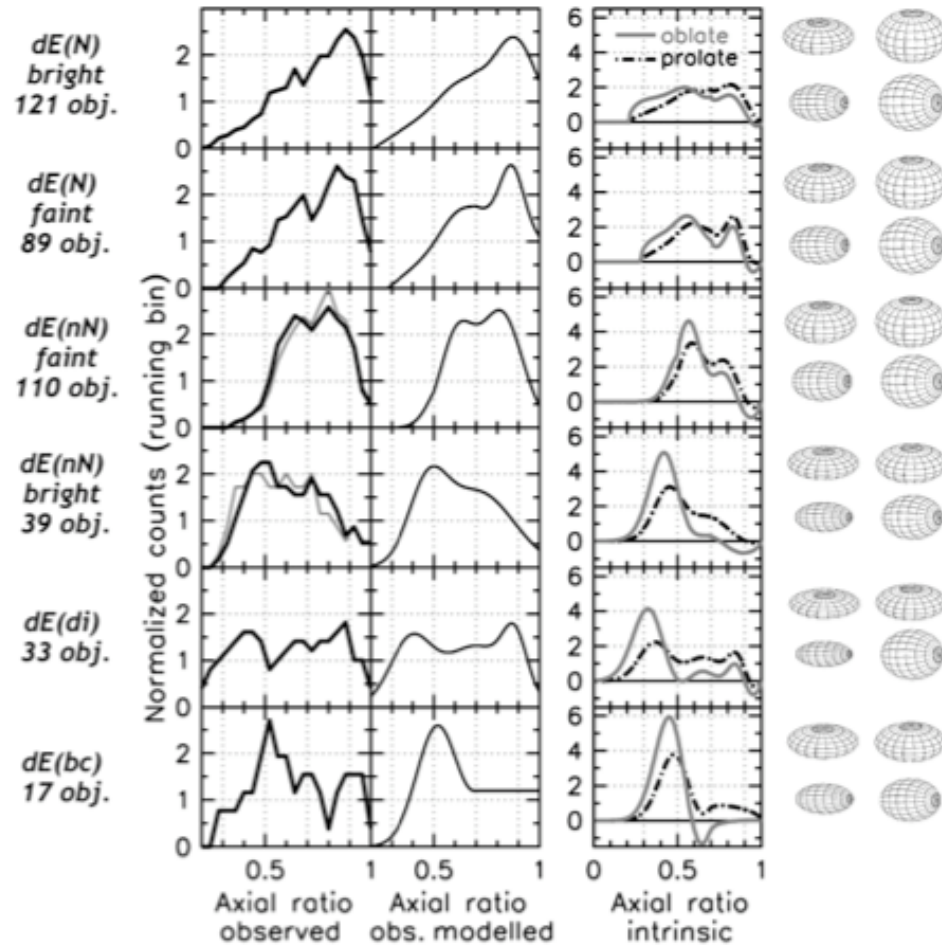


Rudnick+09

Shapes constrain origin and/or evolution

bright Virgo dEs are close to oblate spheroids

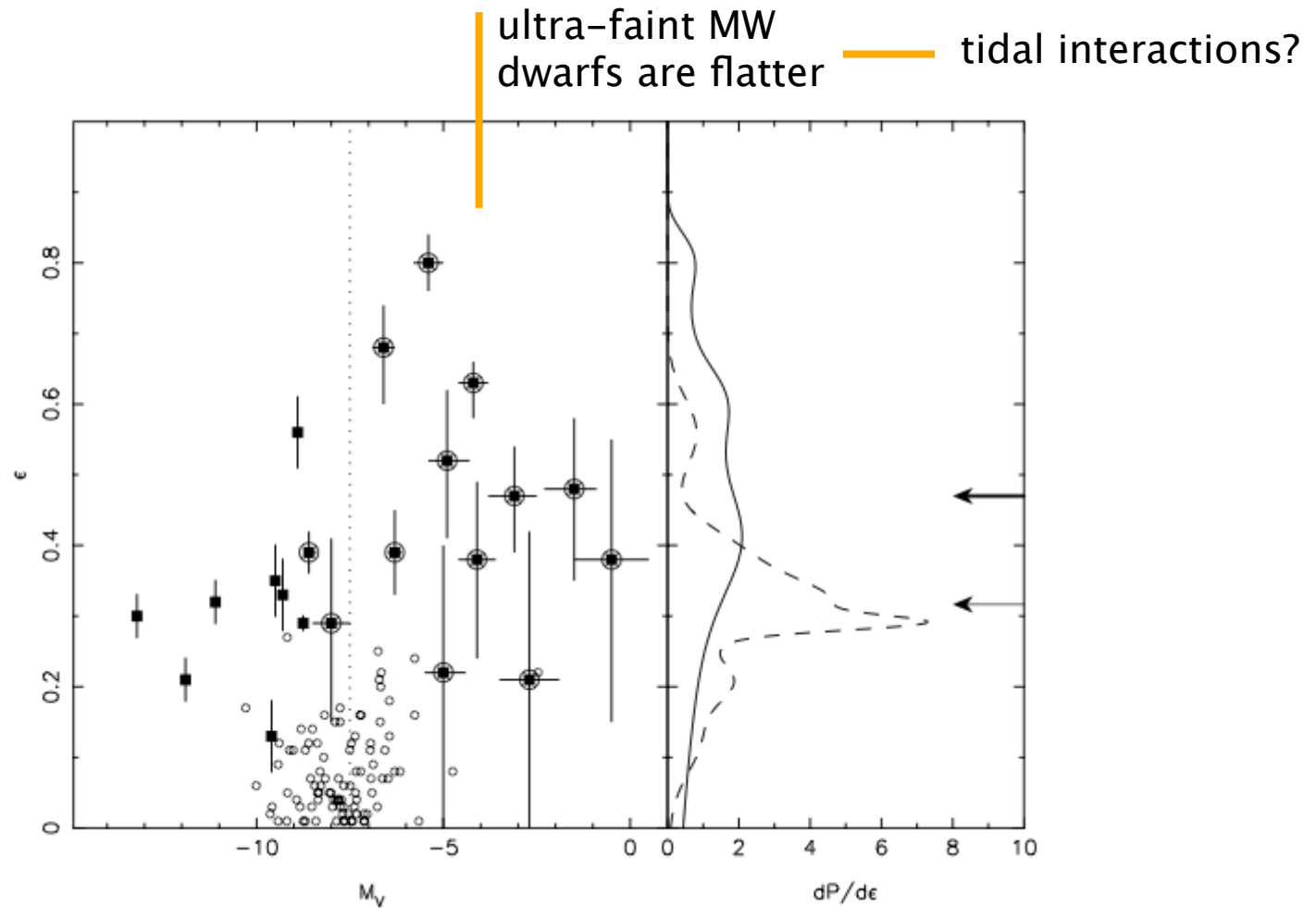
disk/SF dEs are flatter



413 dEs w/ $M_B < -13$

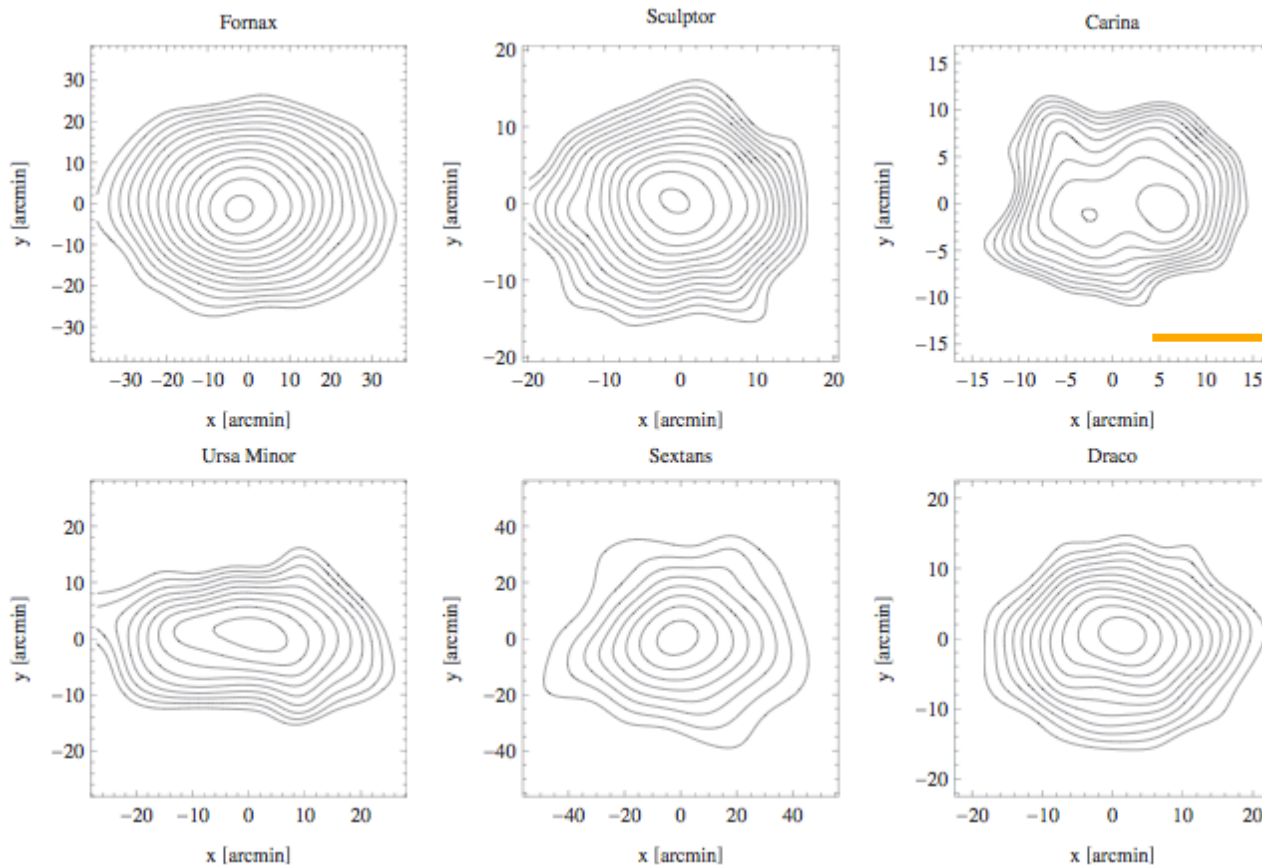
Lisker+07

Shapes constrain origin and/or evolution



Martin+08

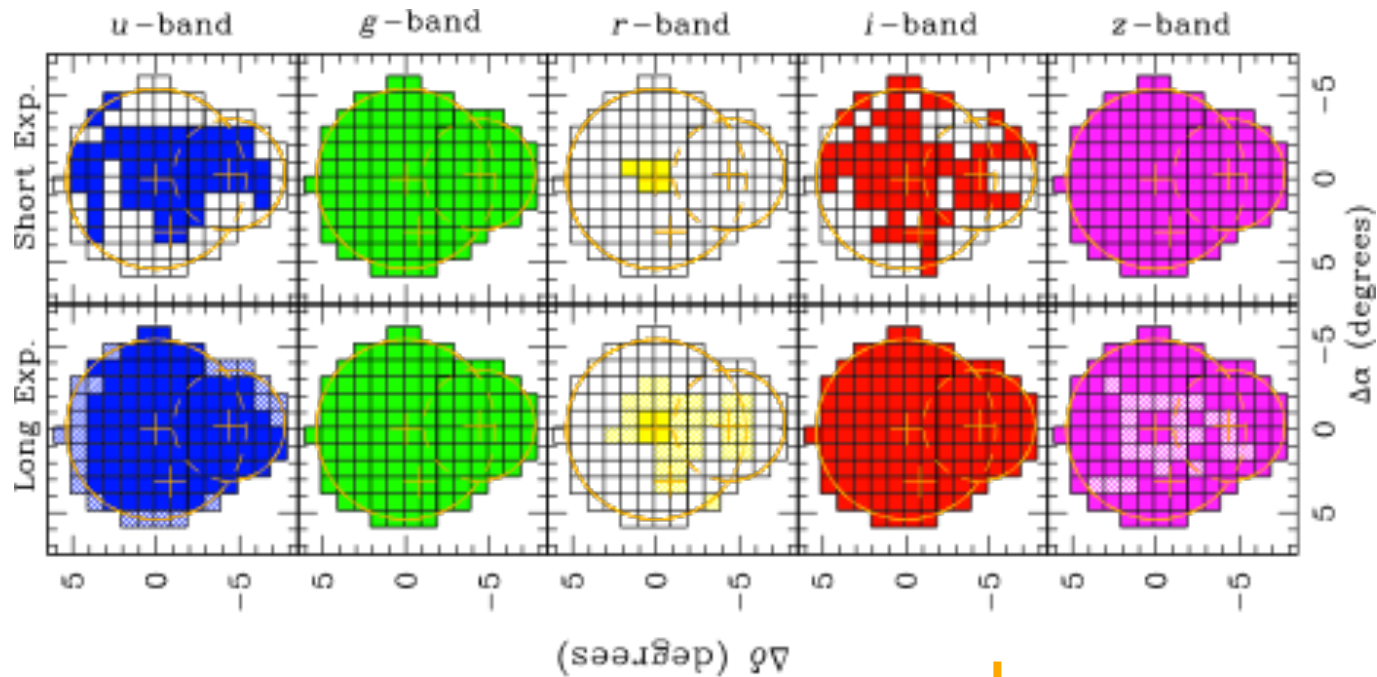
Shapes constrain origin and/or evolution



shapes of (classic) MW satellites consistent with predictions of tidal stirring model

Lokas+12

the NGVS: a deep imaging survey of Virgo + dedicated spectroscopic follow-ups



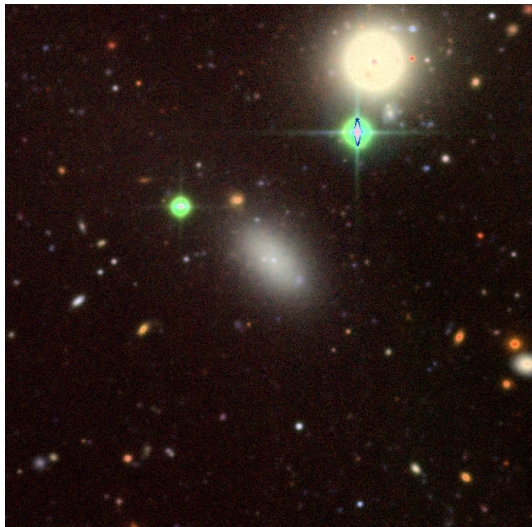
104 deg² @ CFHT
ugiz+r
 $\mu_g \sim 29$ mag arcsec²

Ferrarese+12

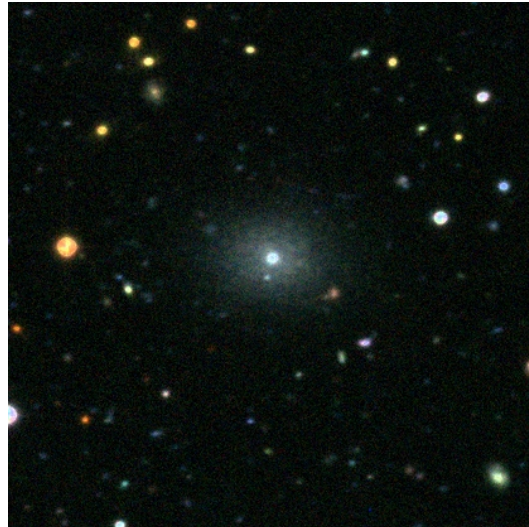
dSphs in Virgo

as seen by the NGVS

gri composites



$M_g = -14$ mag



$M_g = -12$ mag

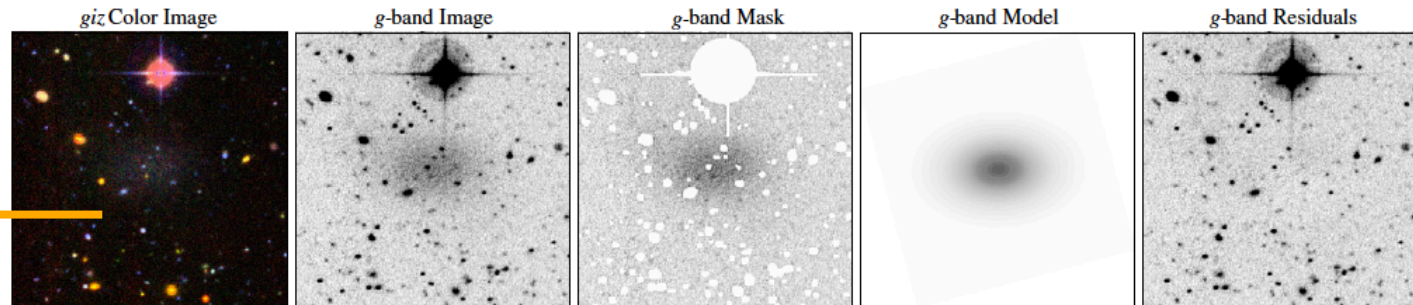


$M_g = -10$ mag

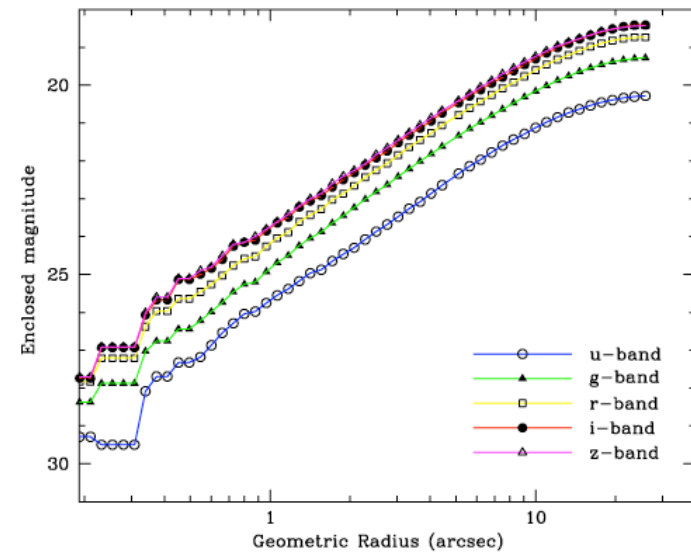
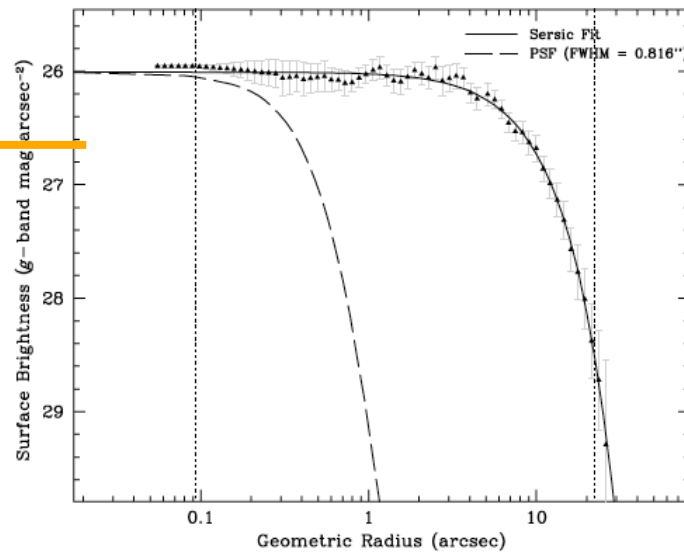
the NGVS: a deep imaging survey of Virgo

+ dedicated spectroscopic follow-ups

Mg = -12 mag
dSph



1D (isophotal)
+
2D (galfit)
structural
analysis



Ferrarese+12

Goal: to derive the *intrinsic* flattening distribution from observed axis ratios

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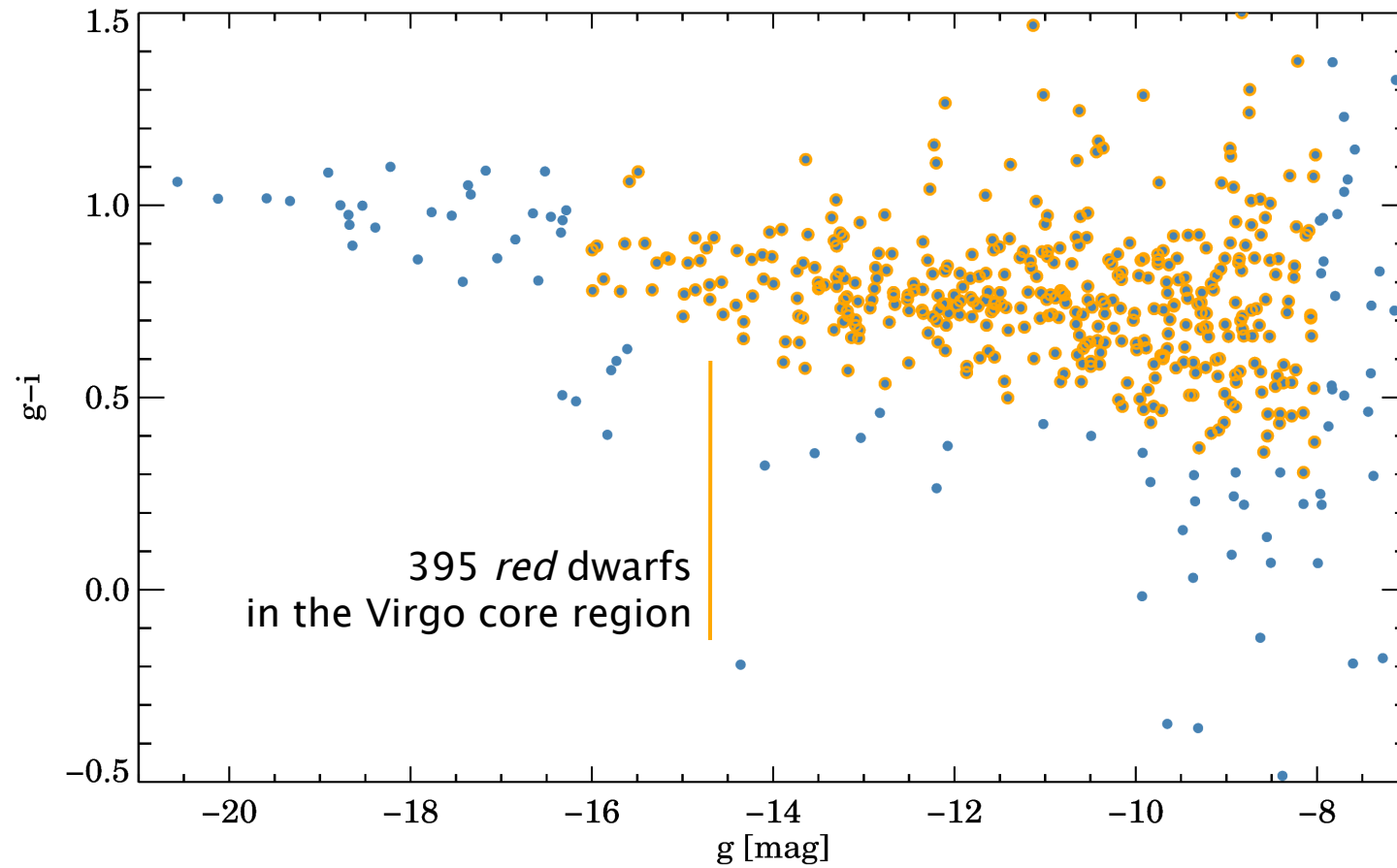


VS.



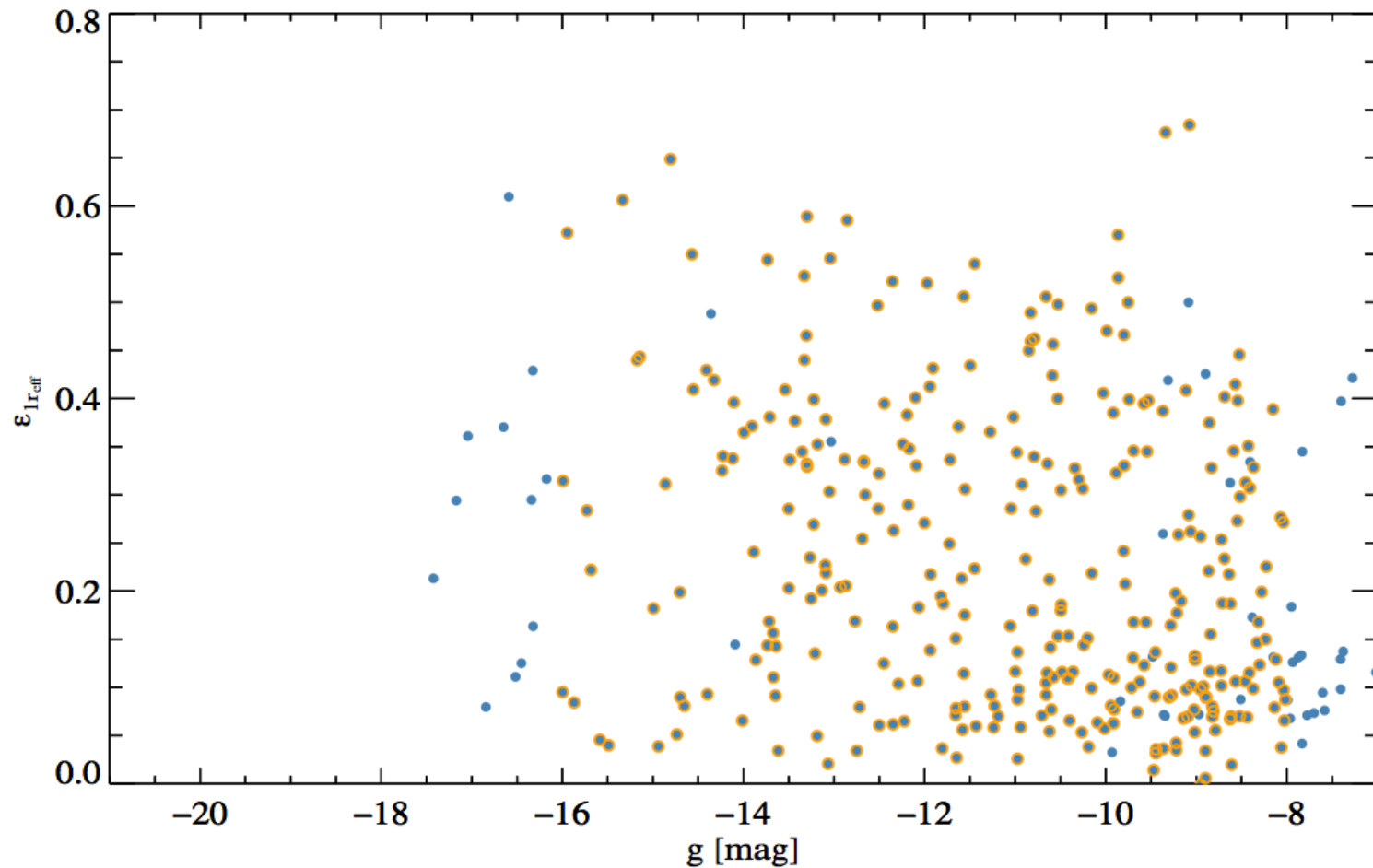
Ingredients

1) a (big) sample of dSphs



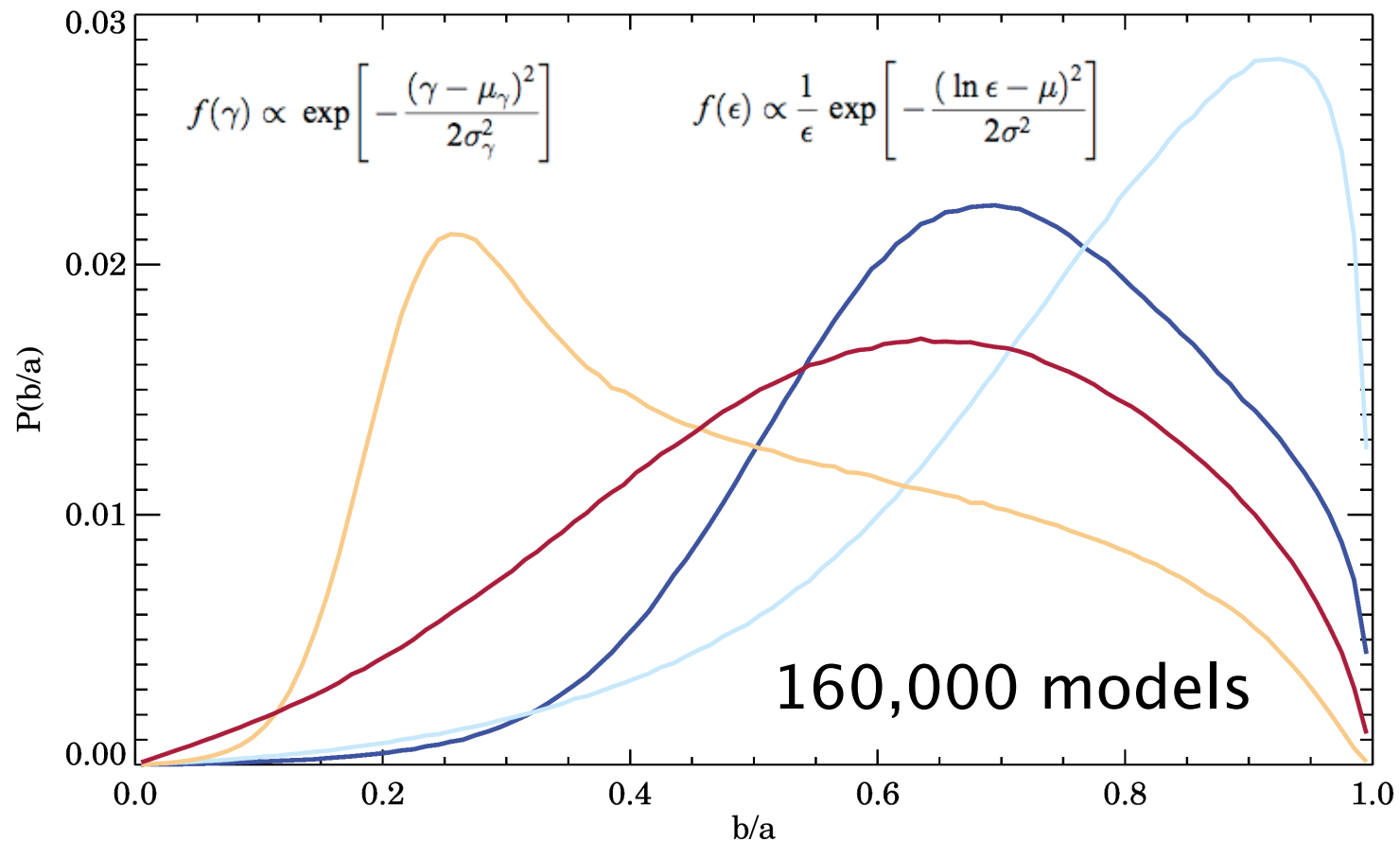
Ingredients

2) the observed distribution of b/a



Ingredients

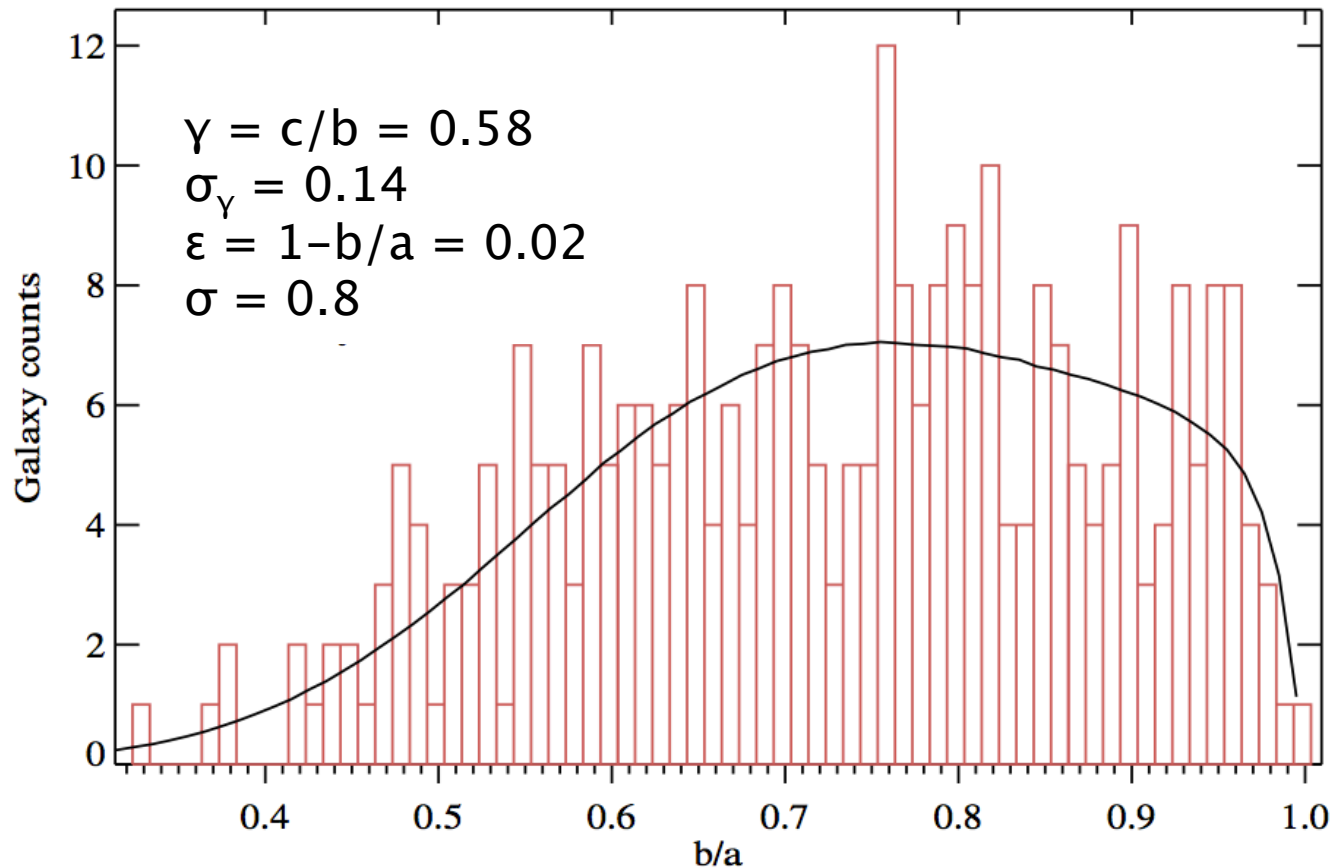
3) the b/a pdf for a (huge) number of triaxial models



(e.g., Ryden+04, Padilla & Strauss 08)

Virgo dSphs are \sim oblate spheroids

Unbinned maximum likelihood fit



Conclusions and future work

dSphs in the core of Virgo
are oblate spheroids ($\langle c/a \rangle \sim 0.6$)

no evidence for (highly) elongated shapes

extend to entire NGVS area – dependence on
mass, clustercentric position...

Model parameters

20⁴ grid

Parameter	Min. Value	Max. Value
μ	-4.05	-0.05
σ	0.4	3
γ	0.09	0.99
σ_γ	0.01	0.36

Padilla & Strauss (2008)

RSJ+10

