The structural properties of the low surface brightness host in Blue Compact Dwarf galaxies.

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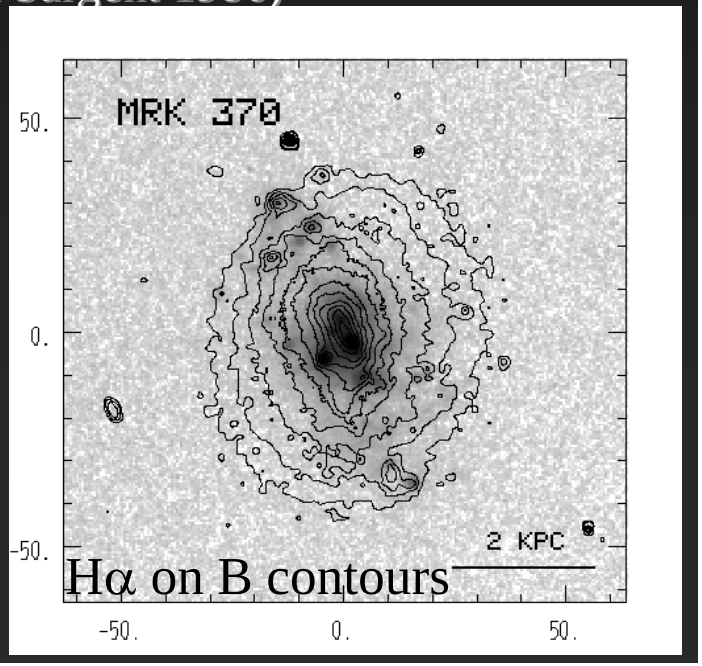
Outline

- Introduction
- Methodology
- Sample of galaxies
- Results
- In progress...

I- Introduction: Blue Compact Dwarfs

- Main characteristics
  - low-luminosity (Mb > -18) compact (D~1kpc) systems
  - gas-rich (Thuan & Martin, 1981)
  - HII region spectra
  - high star formation rates (0.1-10 $M_\odot$/yr; Fanelli et al. 1988)
  - metal-deficient ($Z_\odot/50 < Z < Z_\odot/3$; Kunth & Sargent 1986)

- Stellar populations
  - Starburst
  - Low surface brightness (LSB) stellar host



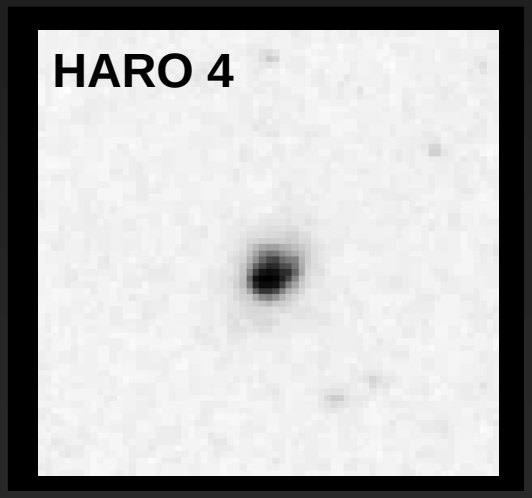
I- Introduction

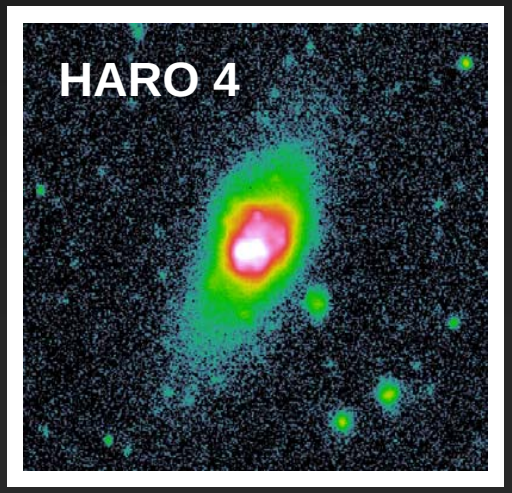
Open questions & goals

- What is the structure and the age of the underlying stellar host?
  - Are there any really young BCD?
  - Are BCDs disk-like galaxies?
- Determine the structural parameters and colours of the host
  - Compare the latter with evolutionary synthesis model prediction
- Are there evolutionary links between BCDs and other types of dwarfs?
- Compare the host structural parameters with those of other dwarf types

I- Introduction problems...

- Unfortunately, to unveil the nature of the host galaxy is a very difficult task. We require high quality data at very low surface brightness levels (from 23-24 to 27-28 mag arcsec^2)





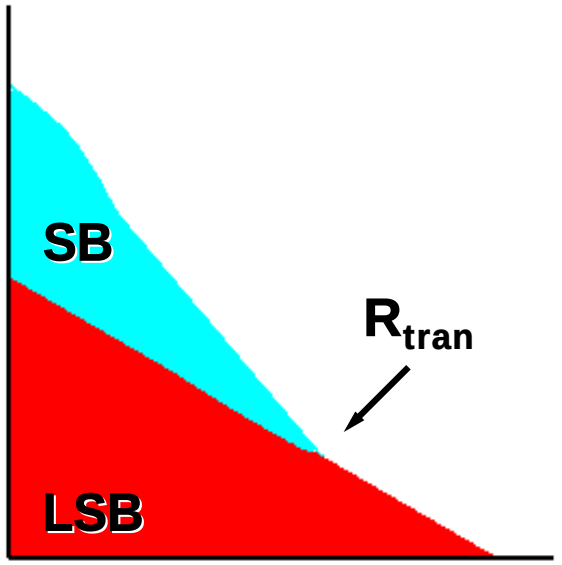
I- Introduction

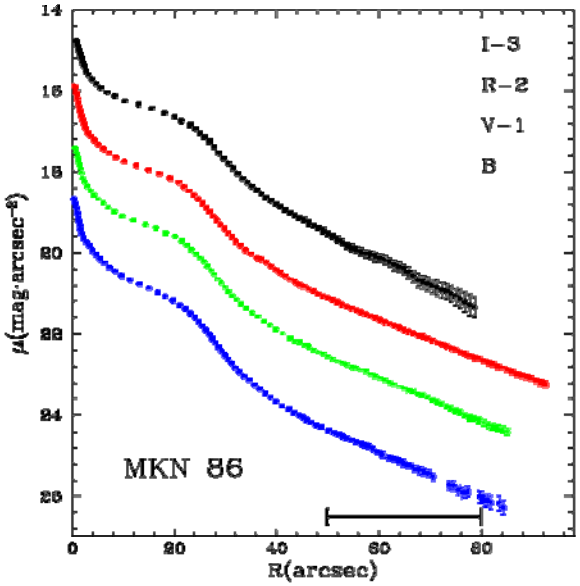
more problems...

- On fitting galaxy components:
  - The Starburst (SB)
  - The Low surface brightness (LSB) stellar host

- Characterization requirements:
  - Proper determination of the fitted region, i.e. Transition radius (R_{tran})
  - Deep, extended profiles
  - Use of a suitable analytical model for the light distribution
    - Sérsic model

$$I(r) = I_e \exp\left\{-b_n\left[\left(\frac{r}{r_e}\right)^{1/n} - 1\right]\right\}$$

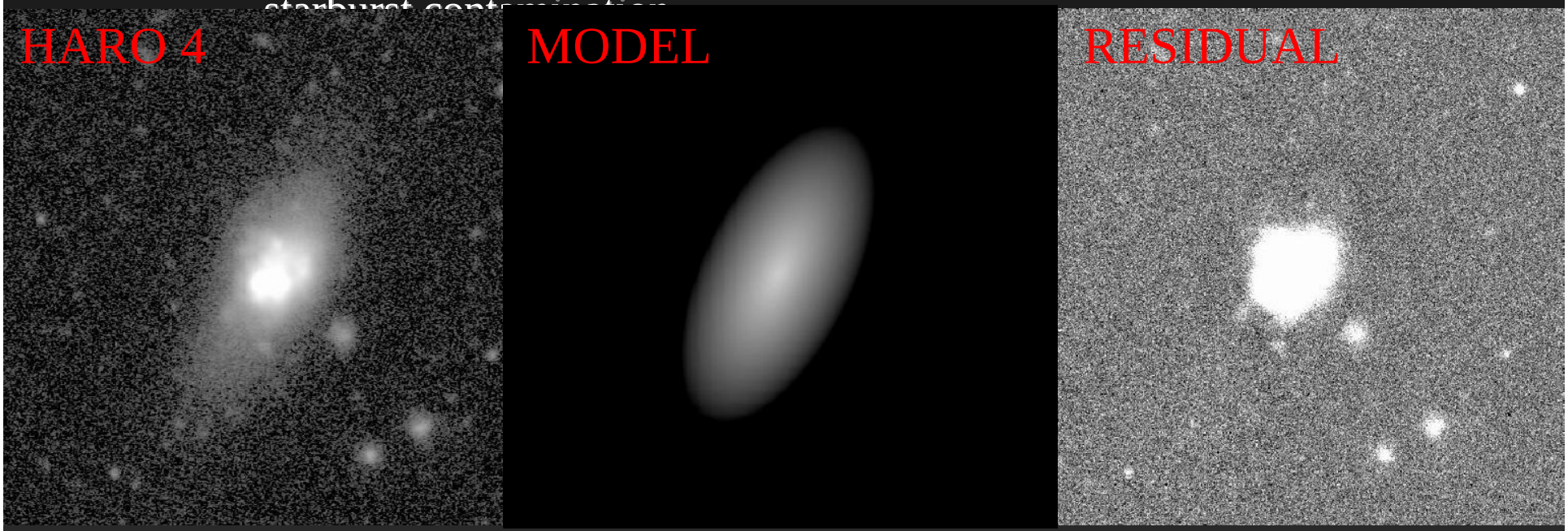




II- Methodology 2D technique

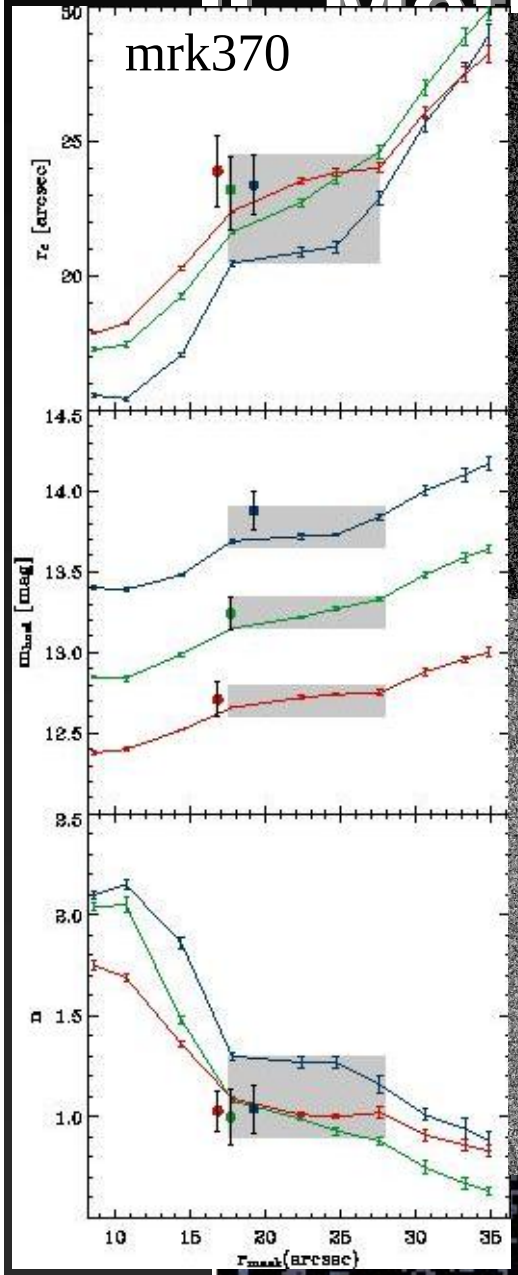
Amorín et al. A&A 2007, in press
(see details in Astro-ph/0702447)

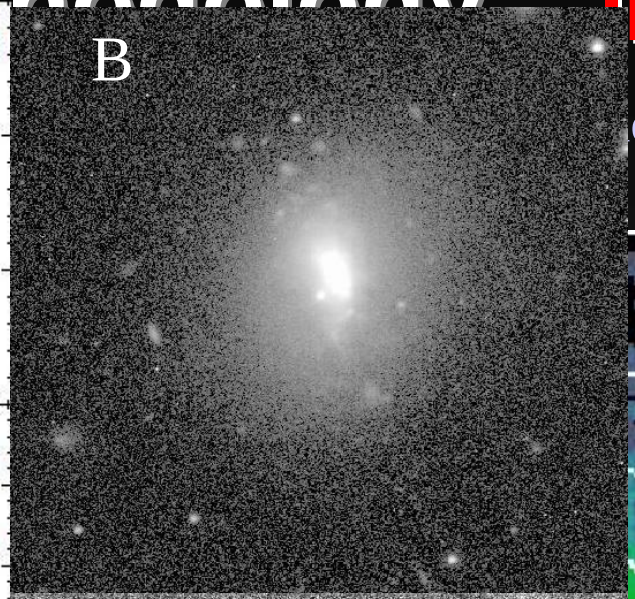
- Two-dimensional fits, a better tool for analysing BCDs
  - Allow us to use all the image information
  - Allow us to introduce accurate masks in order to avoid their large starburst contamination

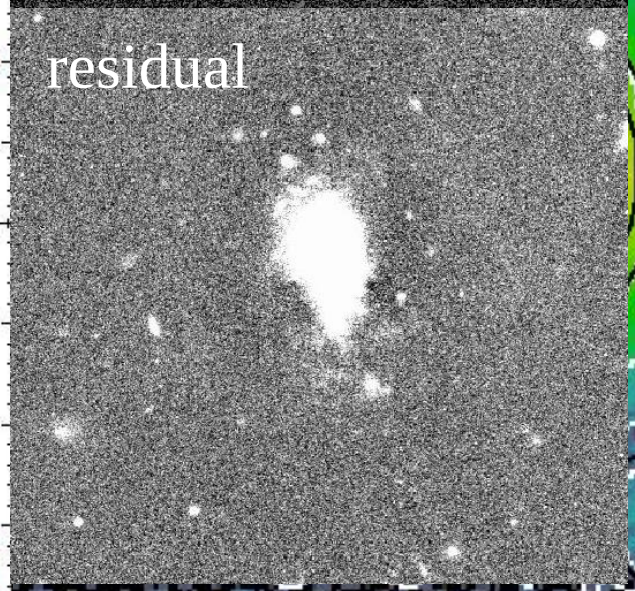


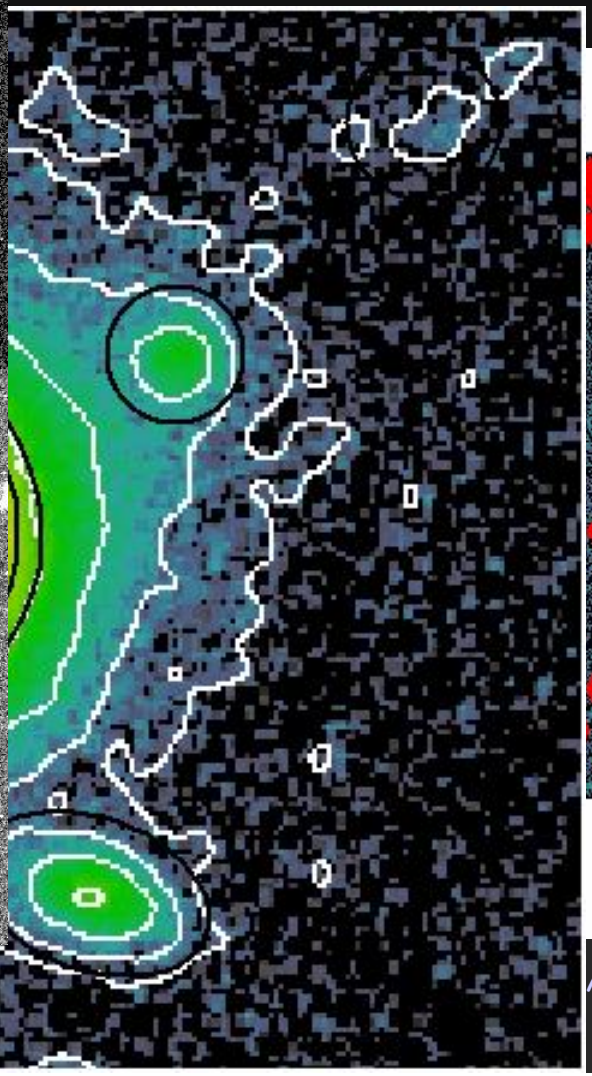
II. Methodology — Implementation

orín et al. A&A 2007, in press
(see Astro-ph/0702447)





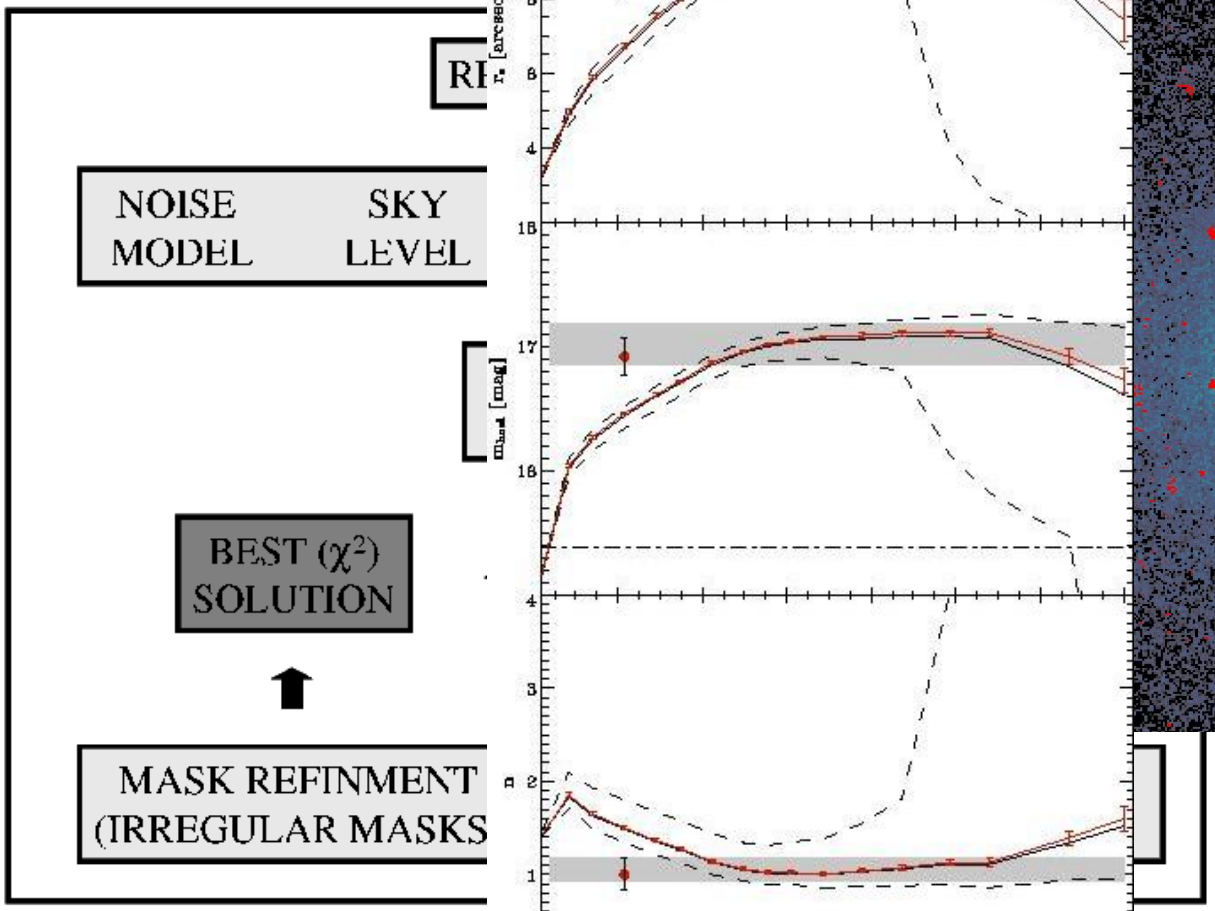


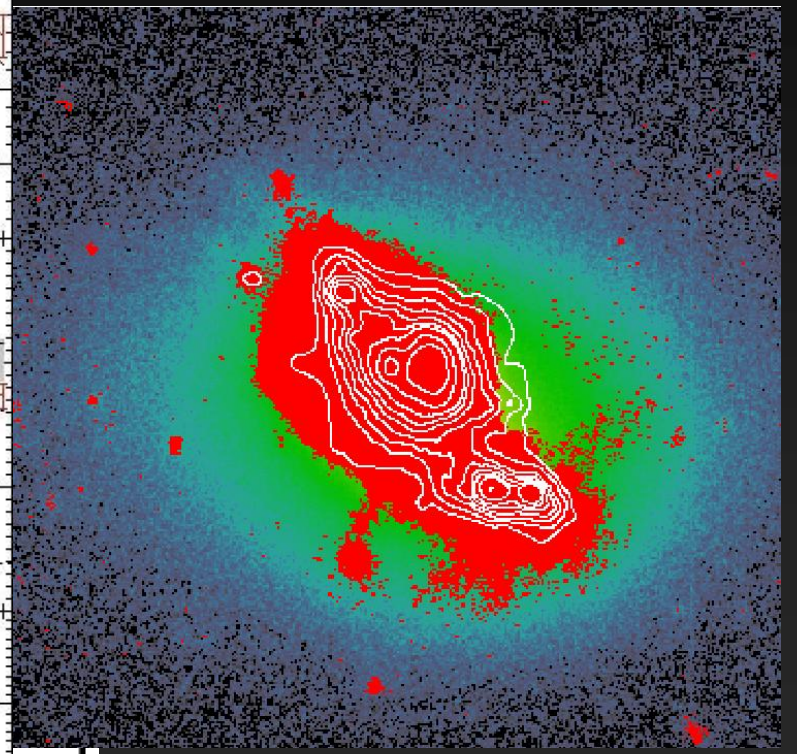




II- Methodology **Implementation**

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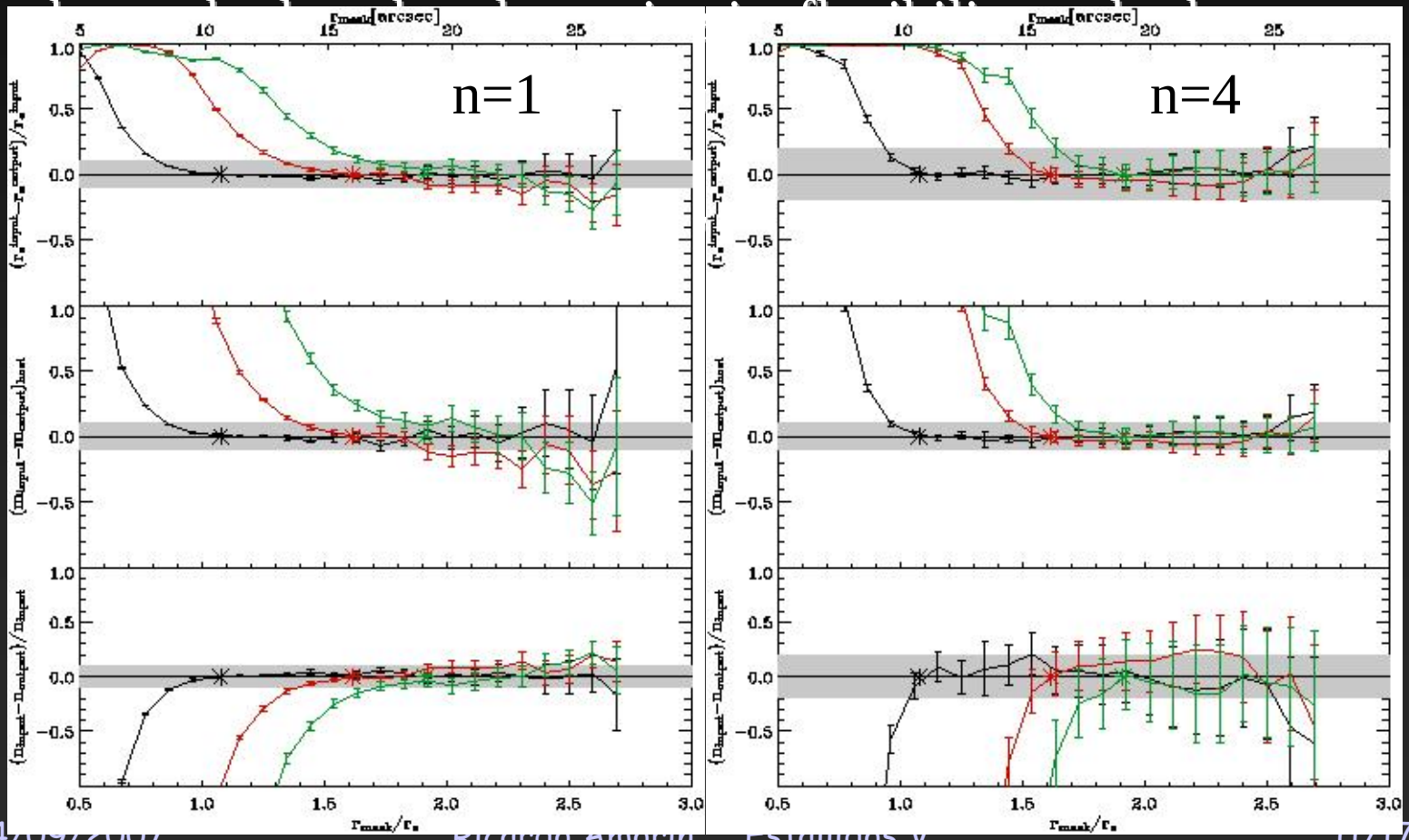


II- Methodology

- Some consistency checks:
  - Reliability of the parameters are assessed by examining their stability plots. We explore whether exist a range in the light profile where the fit is stable and does not depend of the exact choice of R_{tran}
  - Assuming that the LSB component has no color gradients, n and Re should be the same in all filters
  - Old population: the total luminosity should be larger toward red filters

II- Methodology Simulations

- We use synthetic galaxies in order to test the reliability of

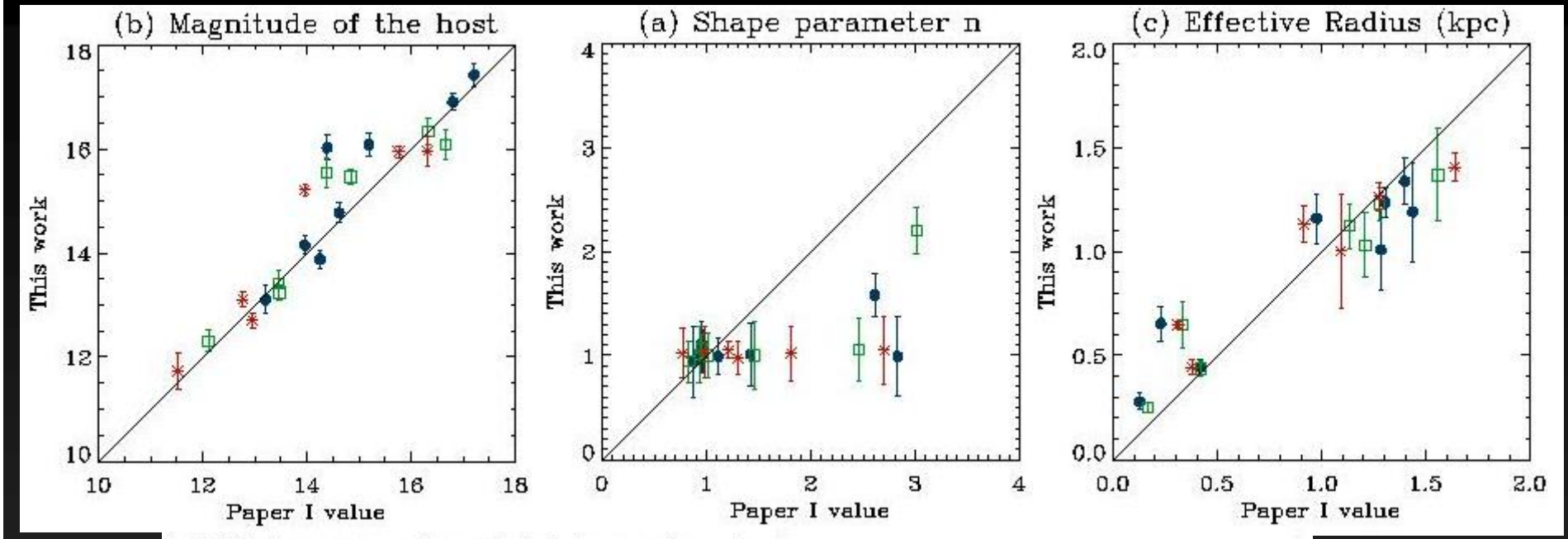


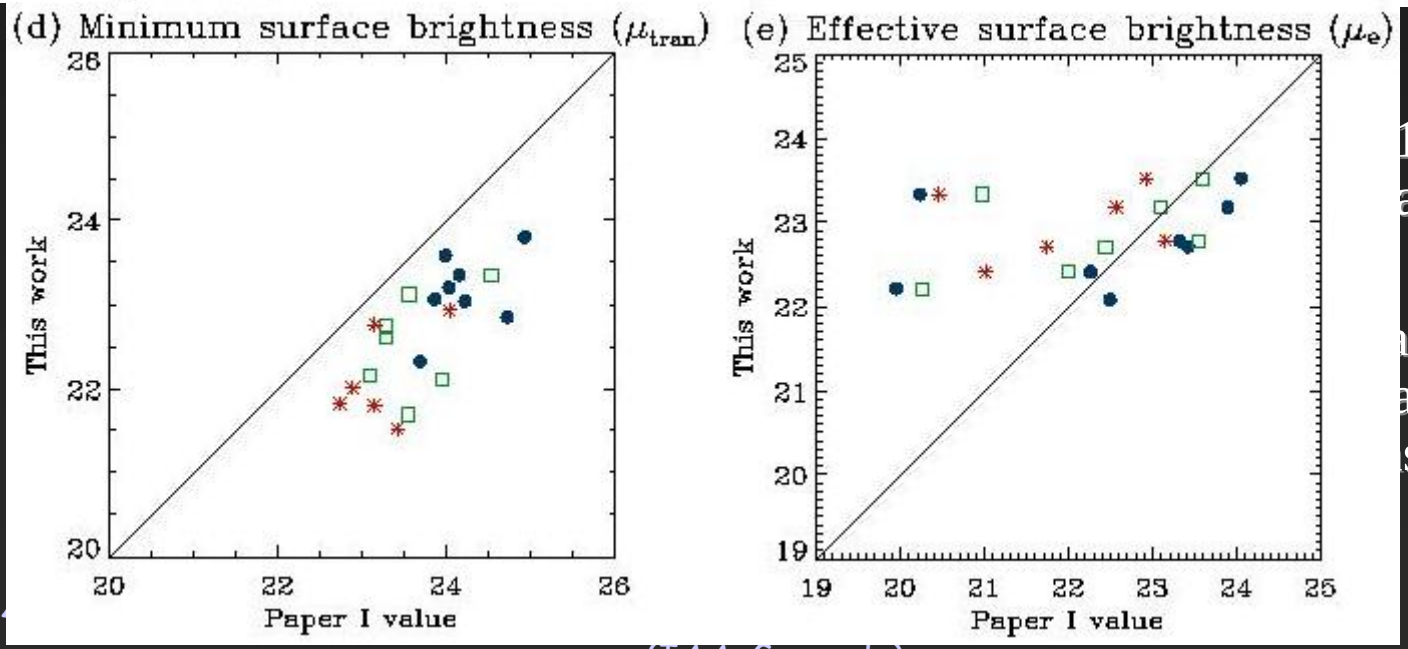
II- Methodology Simulations

- The starburst contamination has been clearly discriminated by plots *parameter* vs. R_{mask}
- Uncertainties grow up when $R_{mask} > R_{tran}$, showing no systematic effects, showing typical relative deviations of ~10% for low n objects and ~20-30% for high n objects
- Deviations induced by a bad sky-subtraction in low *n* models are smaller than in higher n objects . The most affected parameter is the Sérsic index *n*
- All the parameters behave in a similar way for all the starburst sizes and luminosities considered: a downward slope followed by a flatter curve.
- The models show stability, i.e. within 10% (n=1) and 20% (n=4), in a range > 0.4 R_e even when fitting pixels out of $R_{mask} \approx 1.5$

III- Sample

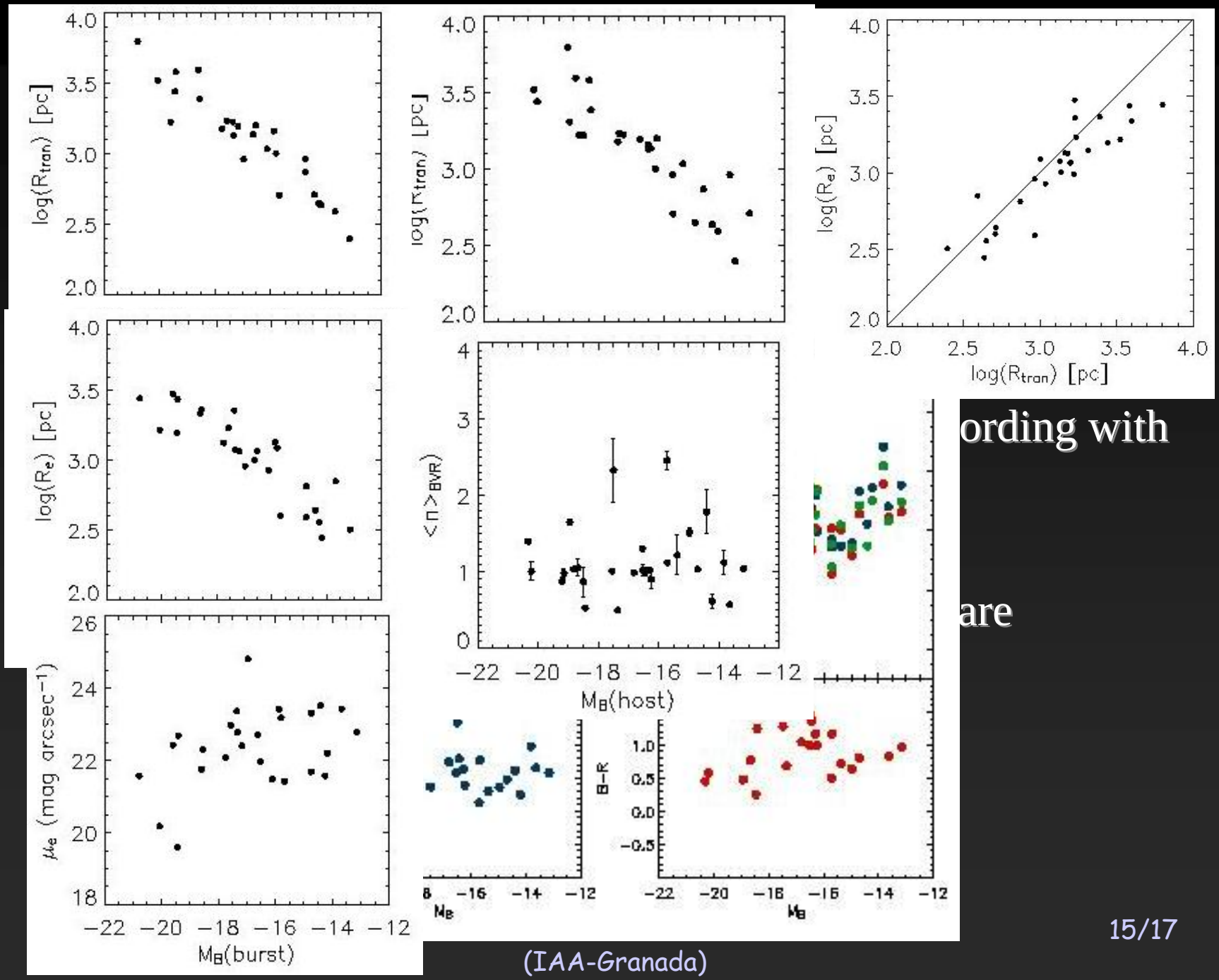
- Cairós et al. 2001
  - 28 star forming galaxies: 22 included in Thuan & Martin (1981), 4 from Terlevich et al. (1991), and two from Mazzarella & Boronson (1993)
  - Wide range of luminosities , $-14 \leq M_b \leq -20$
  - Heterogeneous morphology
  - Reliable data in gas content, total mass and metal abundances from literature
  - Broad-band photometry (UBVRI) with different instruments and telescopes (2.5m NOT, 3.5m and 2.2m CAHA, 1.5m La Silla, and 2.5 INT)





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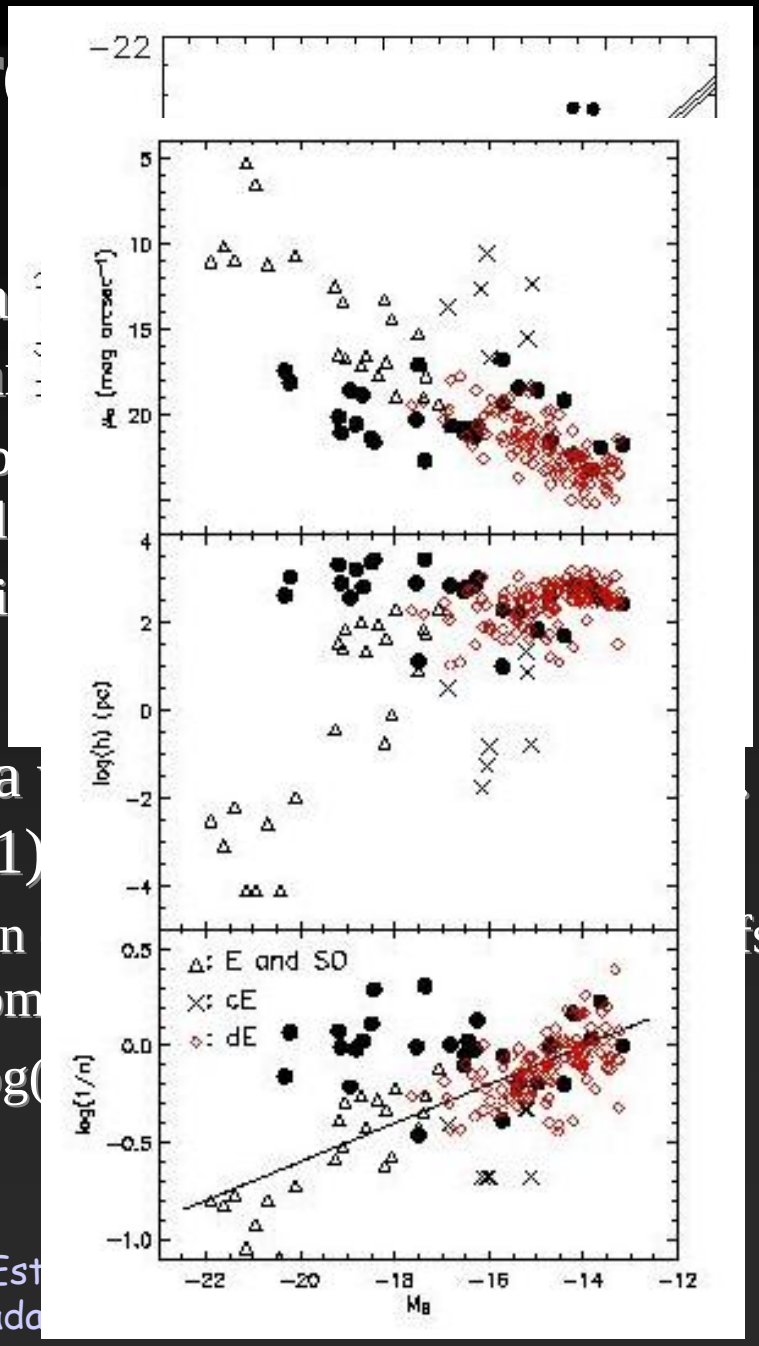


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V- Work in progr

- We are comparing the structura
  sample with those of other dwa
  - comparison with the previous pub
    1996; Cairós et al. 2000, Bergvall
  - Discussion of the possible scenari
- We aim to correlate optical data
  RC3 and Thuan & Martin, 1981)
  - The baryonic Tully-Fisher relation
    (e.g. Vaduvescu et al. 2006; Schom
  - "Fundamental Plane" (M_b= a * log(
    galaxies (Vaduvescu et al. 2006)



Thank you !!

I- Introduction Motivations

- Unveiling the properties of the low surface brightness stellar host: WHY?
  - Deriving their ages and chemical abundances is a first step to establish the evolutionary status and the star formation history of the galaxy
  - Comparison of the host structural properties with those of other dwarf types (dIs, dEs ...) and LSB galaxies, to investigate evolutionary links
  - The host galaxy contains most of the stellar mass (e.g. Papaderos et al 1996; Vaduvescu et al 2006)
  - Its morphology holds clues to the evolutionary status of the galaxies and to the star formation processes