The extended objects of Gaia

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Gaia observes extragalactic objects

Systematic Survey (G<20.7)

- Galaxies (most never observed/resolved from earth)
- QSOs (link with ICRF)

We expect :

I - **500 000 QSOs**

II - Galaxies :

Galaxies	$G < 20$ mag
E2	6.36%
E-S0	7.03%
Sa	7.51%
Sb	9.21%
Sc	10.21%
Sd	22.08%
Sbc	9.21%
Im	24.77%
QSFG	3.61%
Robin et al. 2012	**38 M**

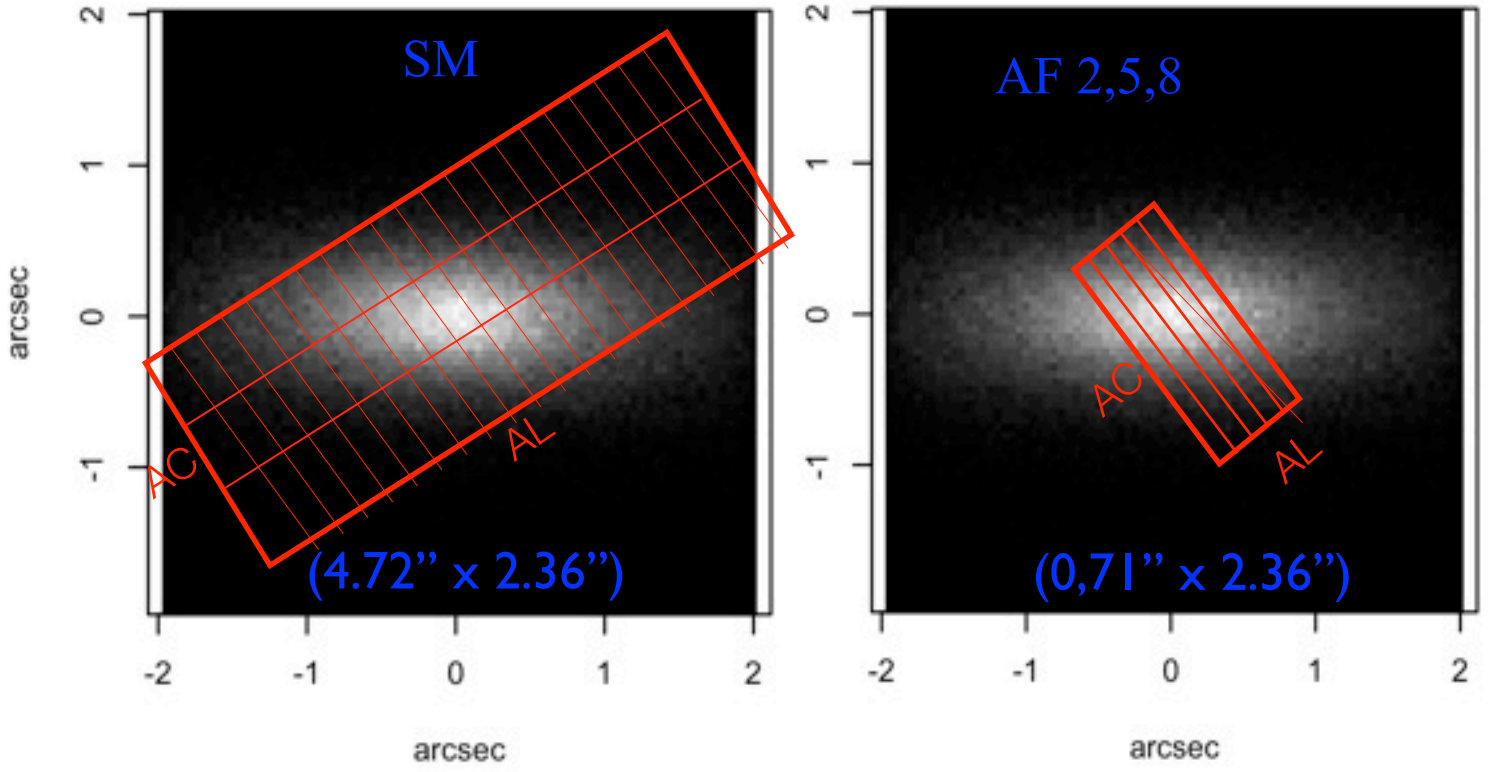
< 1 M galaxies

- most Ellipticals+bulges
- Few Spirals
- Very few irregulars

De Souza et al. 2014

Observations of extended objects :

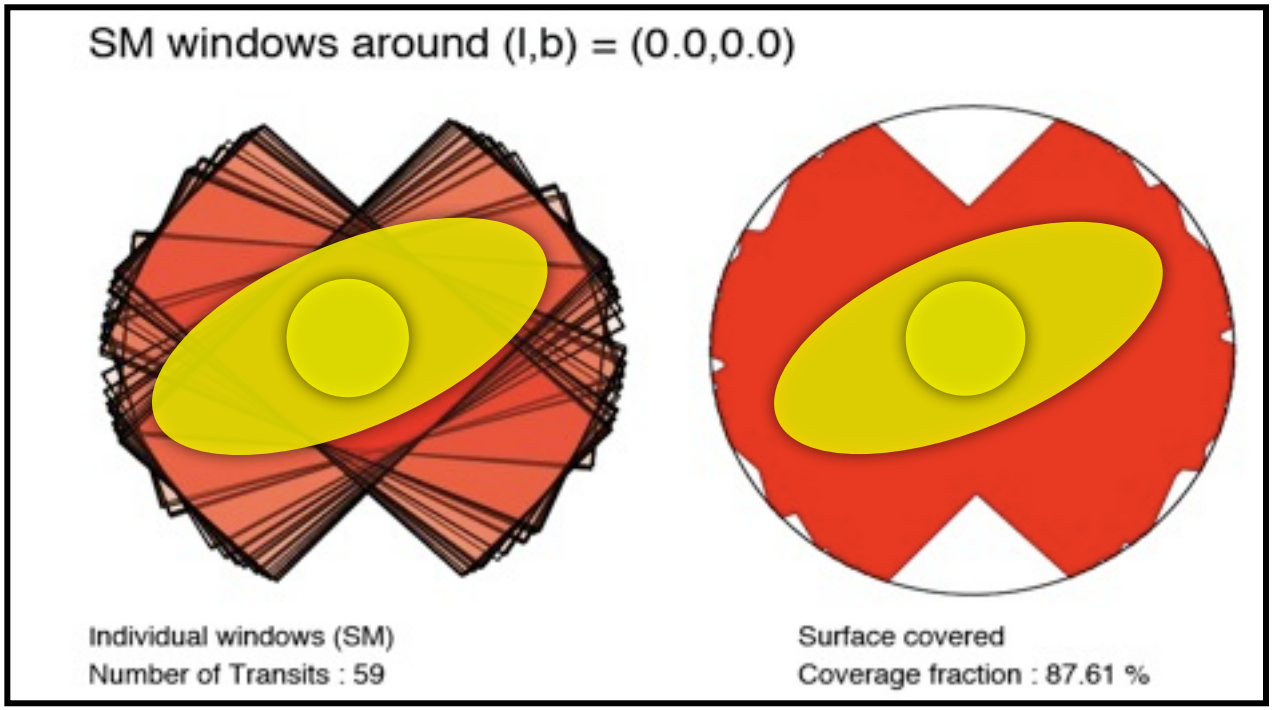
1 - Windowing + binning



Complementarity's of SM and AF

Observations of extended objects :

II - Multi transits



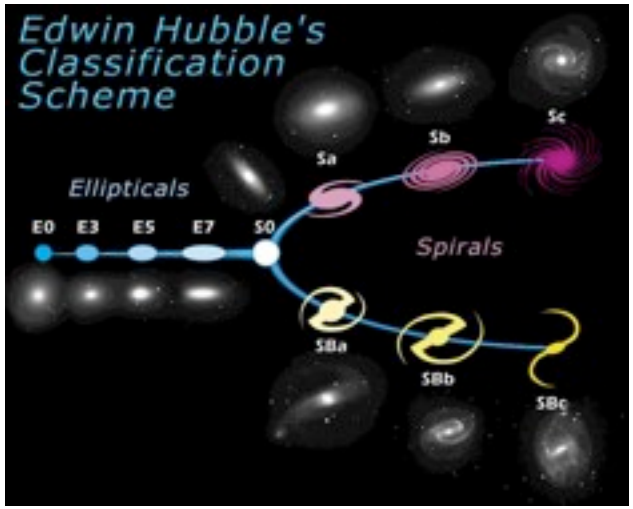
- 70 observations with various transit angles.
- Information of morphology.
- Limitation < 3"

Processing of extended objects

- Extended Objects are processed :

  - By CU3 (Astrometry) as any stellar objects : **(α,δ,μα,μδ,π)** + GoF
  - By CU5 (Photometry) as any stellar objects : **G** + GoF
  - By CU8 (Astrophysical parameters) : **classification**

- Morphologic information is present in observations
  - **size of bulb, extension of disc, b/a**, …



Extended Objects treatment (DPAC DU470)

Galaxies

QSOs

Extended Object flag (issued by CU5 DU18)

QSO flag (issued by CU8)

Image Reconstruction

Image Reconstruction

Image Measurer

Gravitational lenses

Morphological Classification-SVM

Morphological & Astrometric Analysis

Morphological & Astrometric Analysis

- Host galaxy morphology
- Gravitational lens flag

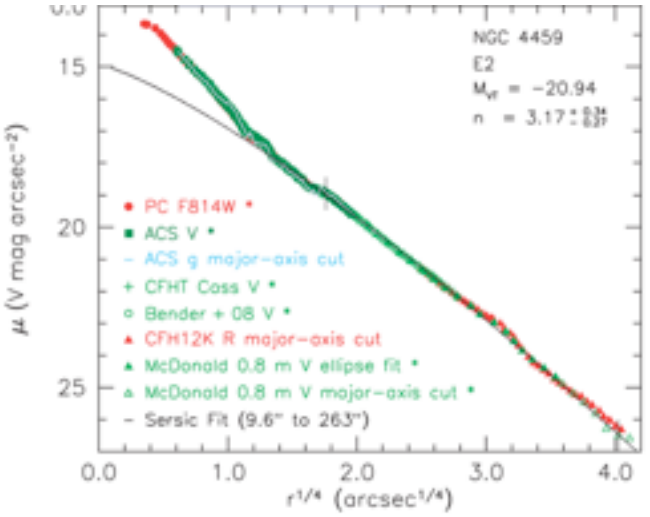
- Morphological and astrometric parameters

MDB

PhD A. Krone-Martins 2011

Extragalactic science with morphology

- Morphology of tiny galaxies
  - Local Univers content
  - Models of profiles of nearby galaxies



Kormendy et al., 2009

- Detection of host galaxies of some quasars
  - Structure optic/radio
  - Perturb. of astrometry of QSO
  - Detection of lensed QSOs

- Processing of Extragalactic sources inside Gaia DPAC (L. Galluccio)
- Detection of extragalactic objects by Gaia (A. Krone-Martins)