Integral Field Spectroscopy of Blue Compact Dwarf Galaxies

Speaker:

M.B. García-Lorenzo

Colaborators:

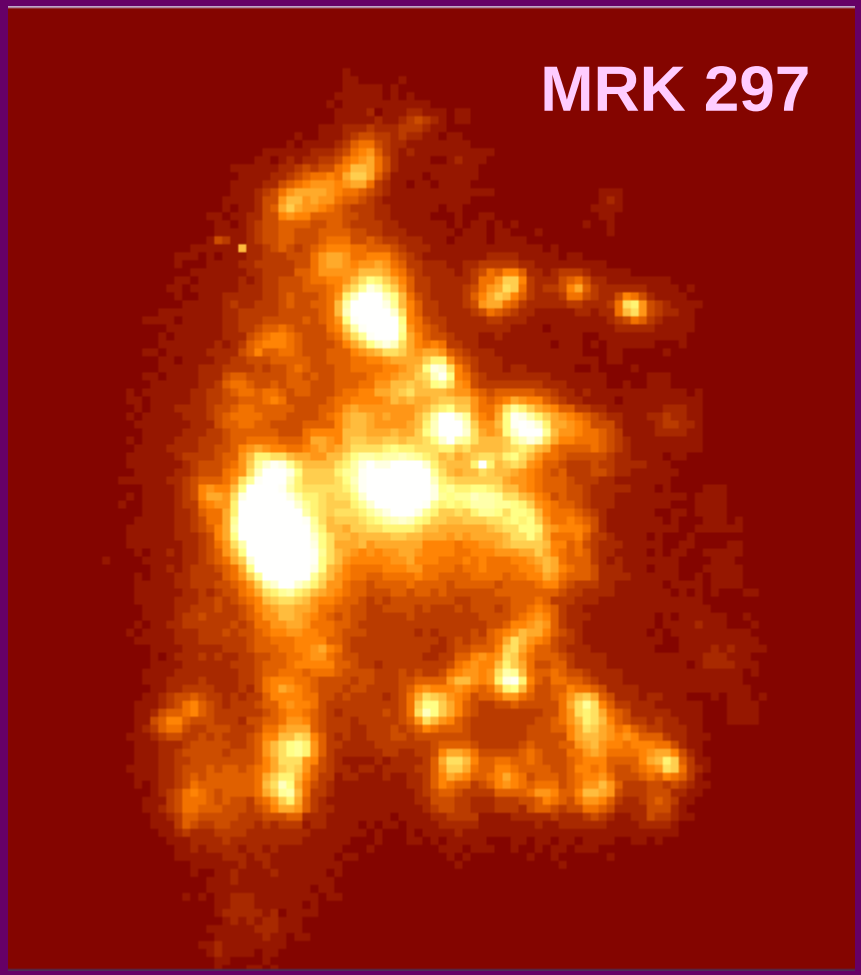
L.M. Cairós, N. Caon,C. Muñoz-Tuñón, J. Vílchez

Motivation

⇨ BCD galaxies have complex morphology

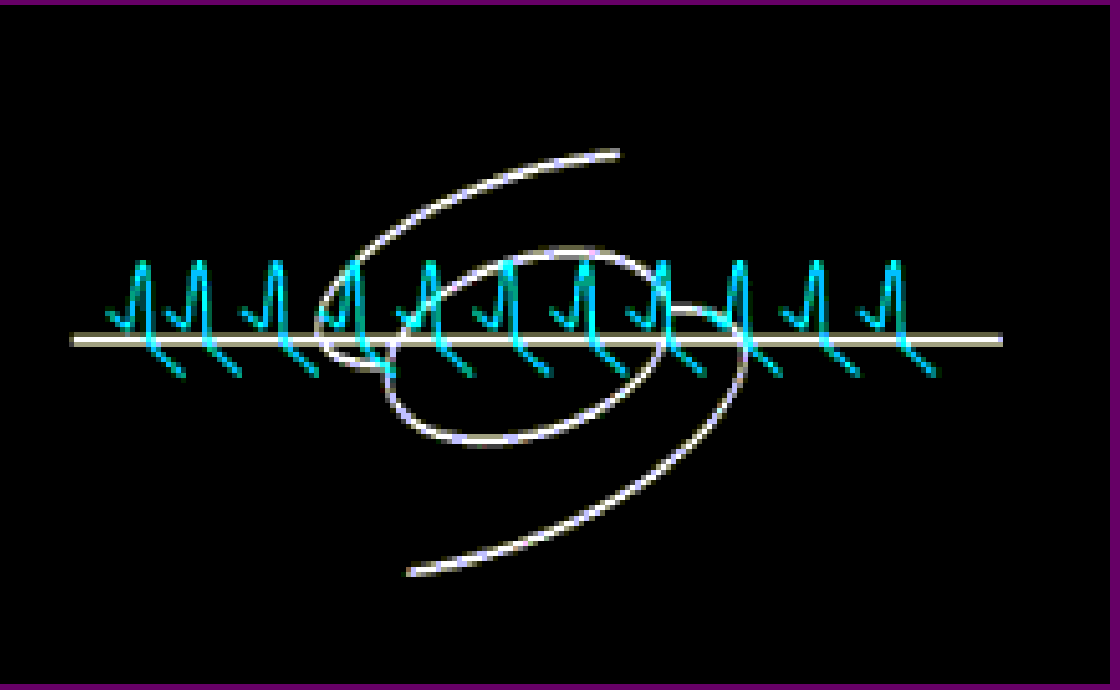
⇨Most of BCDs studies have been done taking images (broad and narrow band) and long-slit spectroscopy

⇨The main problem of traditional techniques is the sequentiality.



Motivation

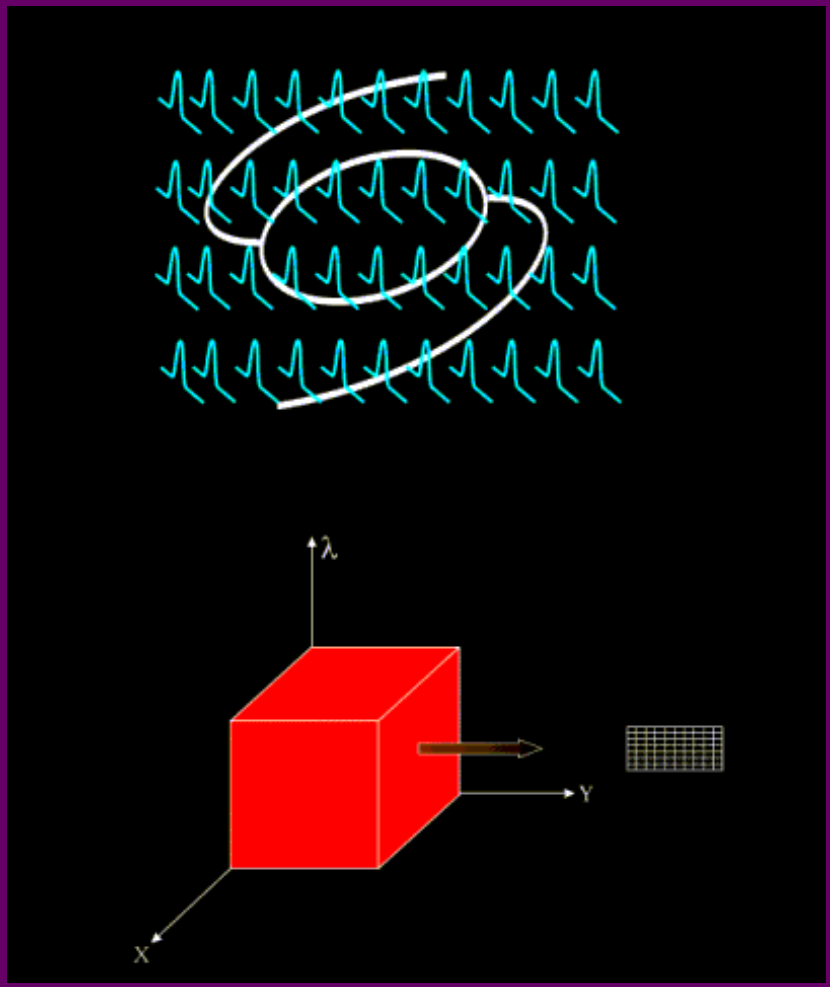
- Long-slit is the classical technique for spectroscopy.
- Long-slit mapping is needed for extended objects (inefficient).
- The instrumental and atmospheric conditions may change at different positions.





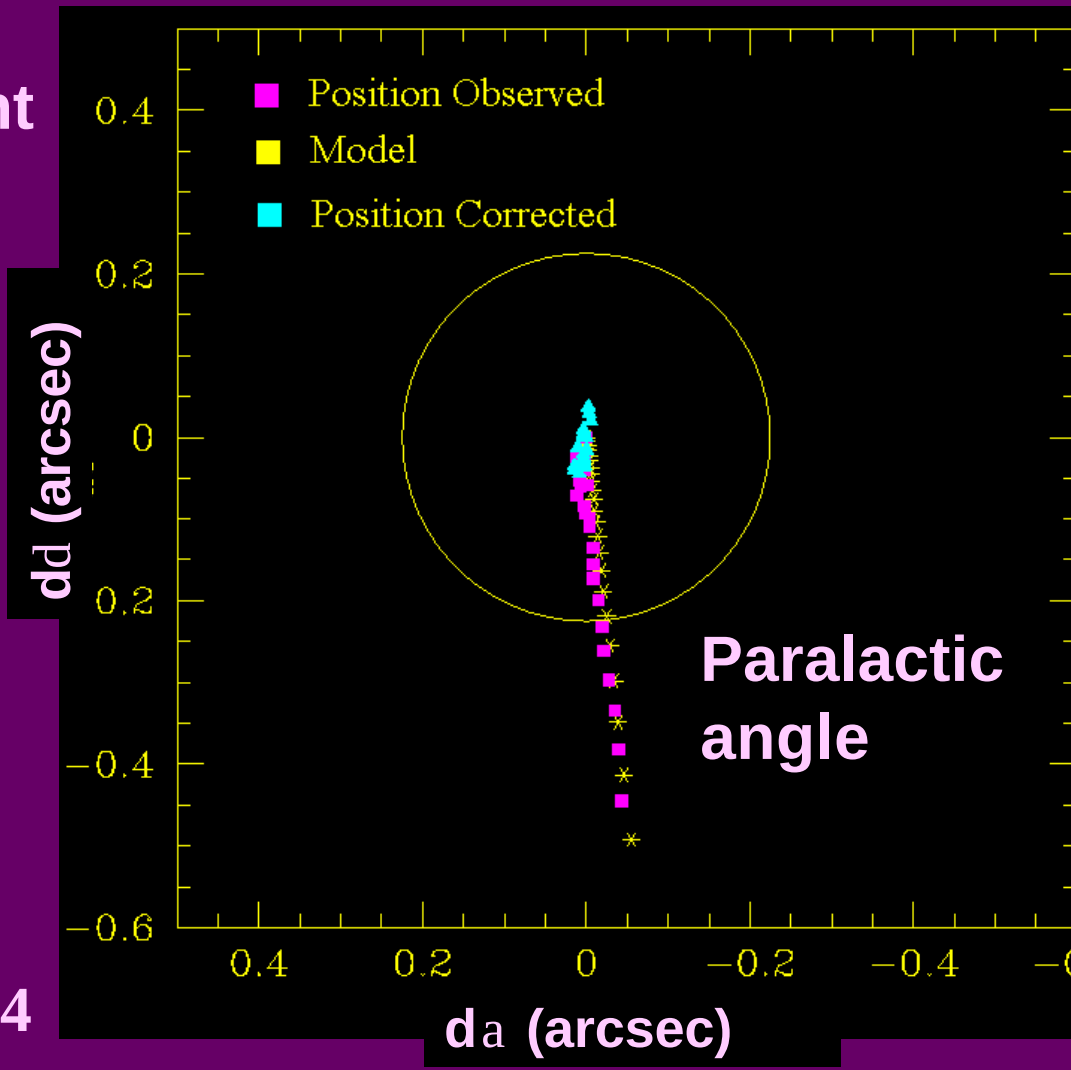
Integral Field Spectroscopy

- Get one spectrum for each point of the object simultaneously.
- Geat homogeneity in the data.
- We can determine and correct the effects of DAR.



DAR

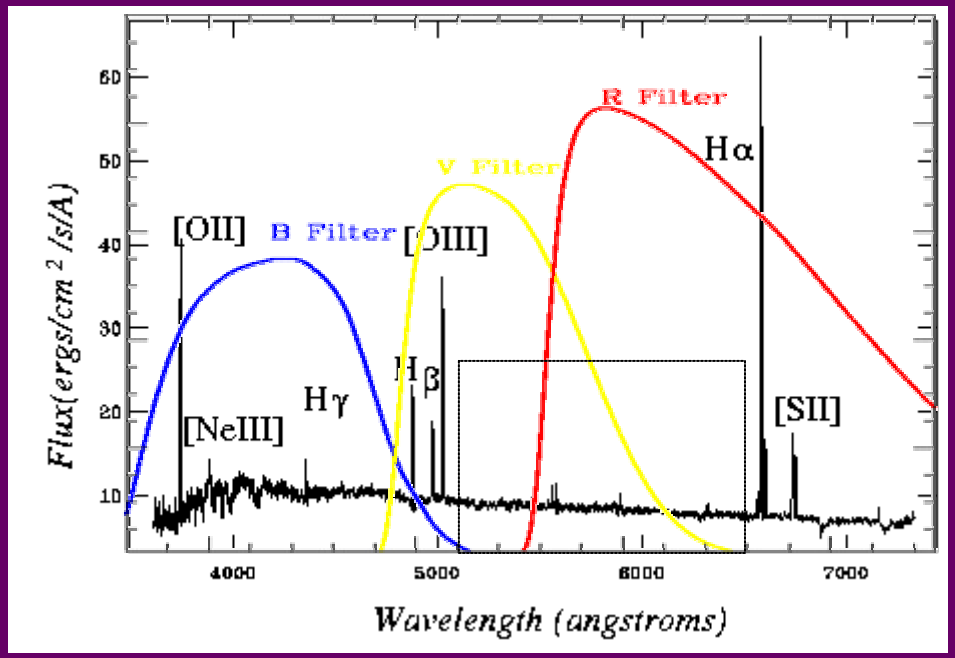
- DAR is always present when doing spectroscopy.
- Slit should be orientated along the paralactic angle to prevent light losses.
- Only IFS allow us to correct DAR effects (Arribas et al 1999 A&ASS, 136, 189)

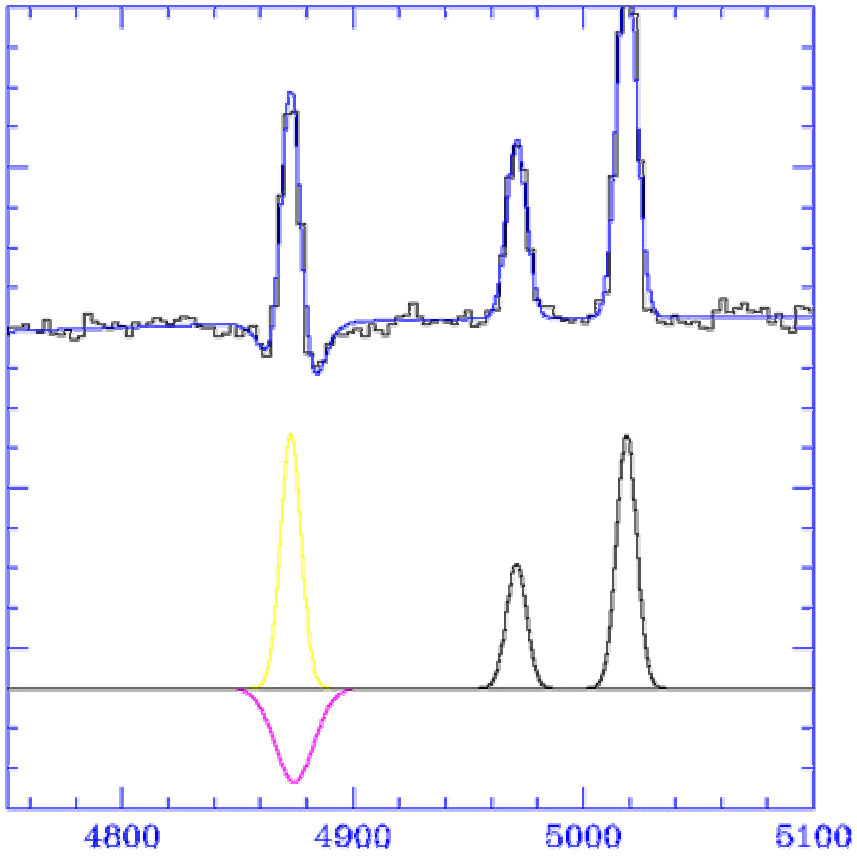


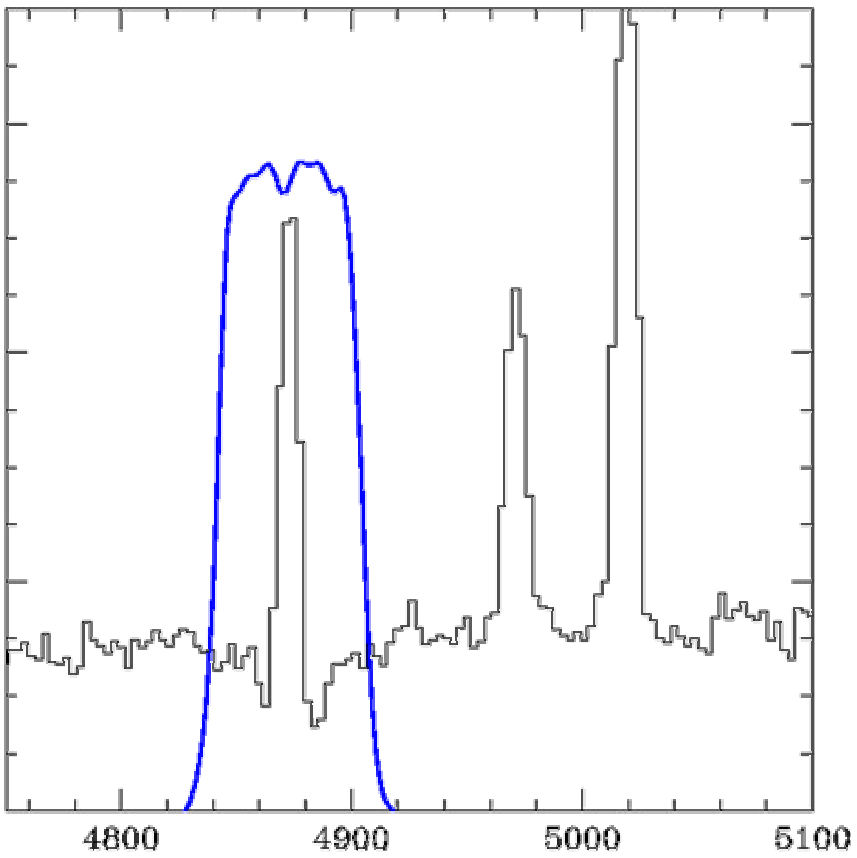
Star Feige34

Motivation

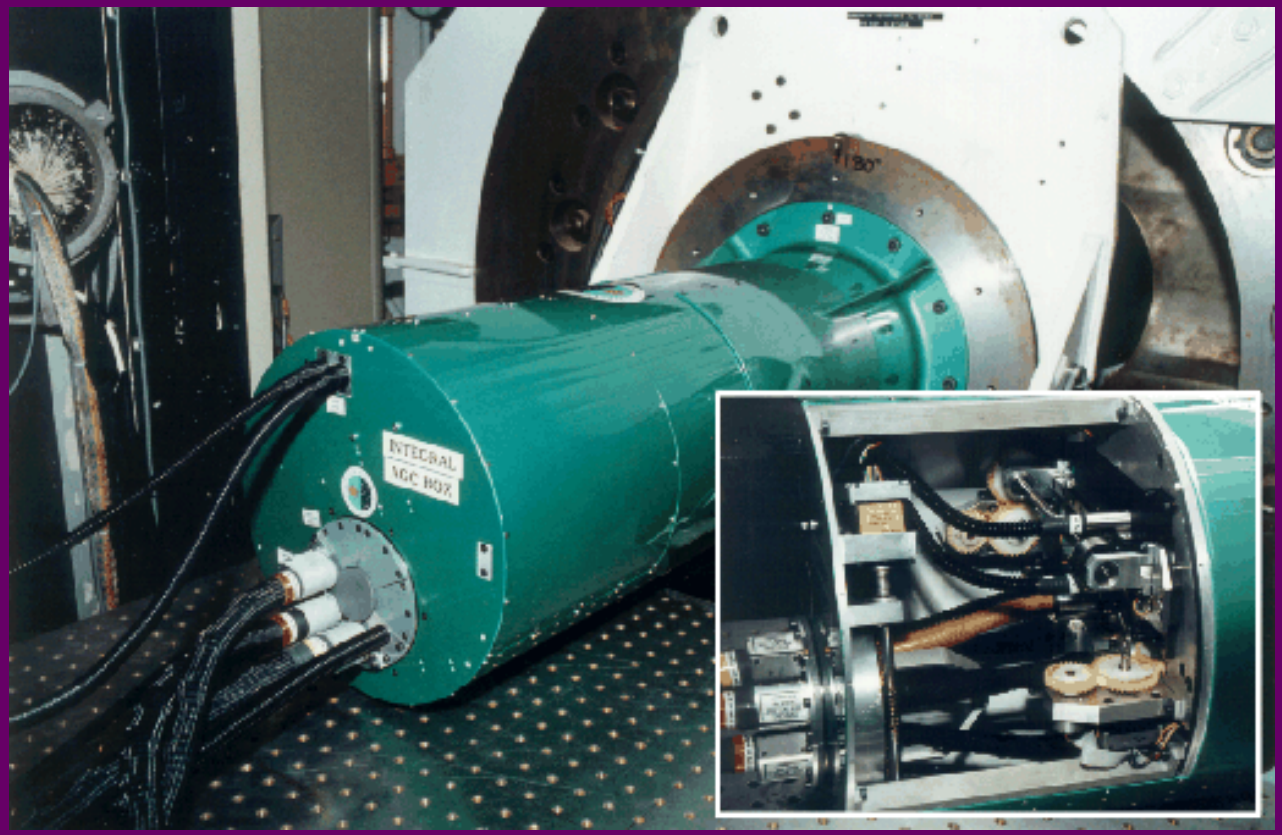
- Broad and narrow band images are also sequential techniques
- Broad band images include emission lines
- What happend with stellar absorptions?




4800
4900
5000
5100

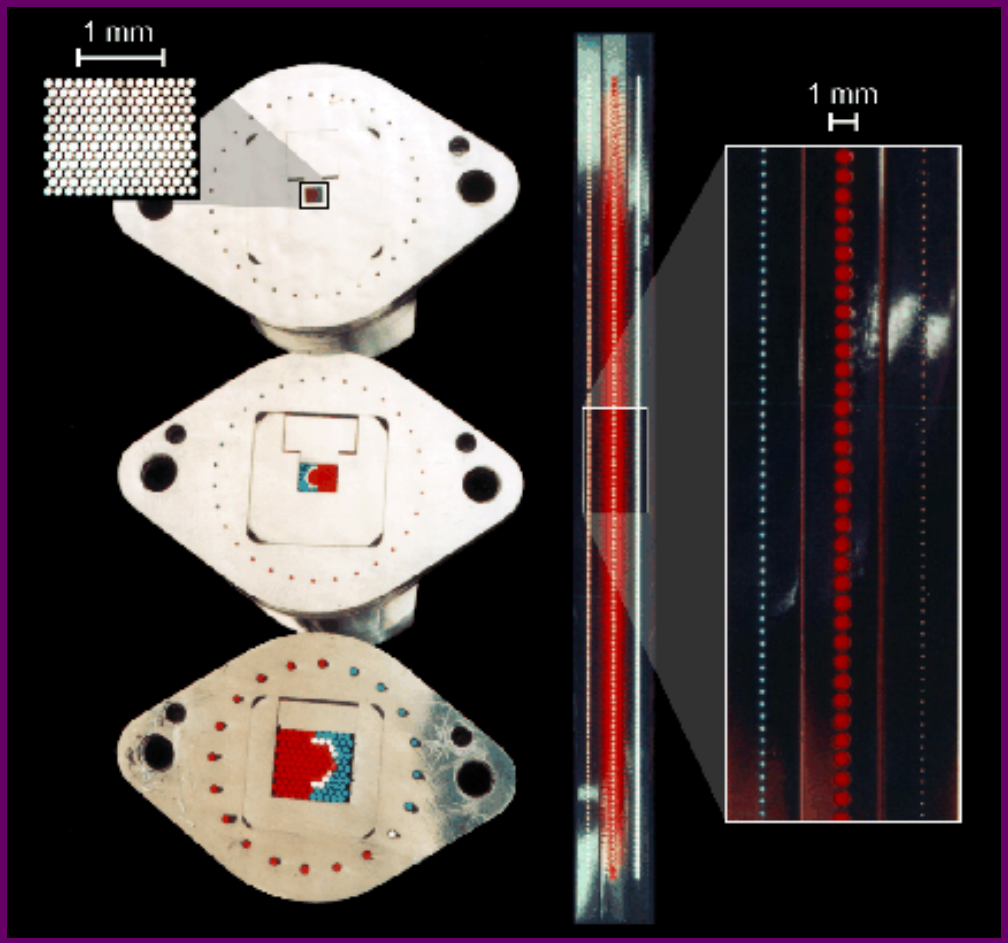

4800
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Integral



INTEGRAL is an optical fiber system at the 4.2mWHT

Integral Bundles



- **SB1**
  - **Fiber size: 0.9”**
  - **Coverage: 7.8”x7”**
- **SB2**
  - **Fiber size: 0.9”**
  - **Coverage: 16.4”x12.2”**
- **SB3**
  - **Fiber size: 2.7”**
  - **Coverage: 34.4”x30.4”**

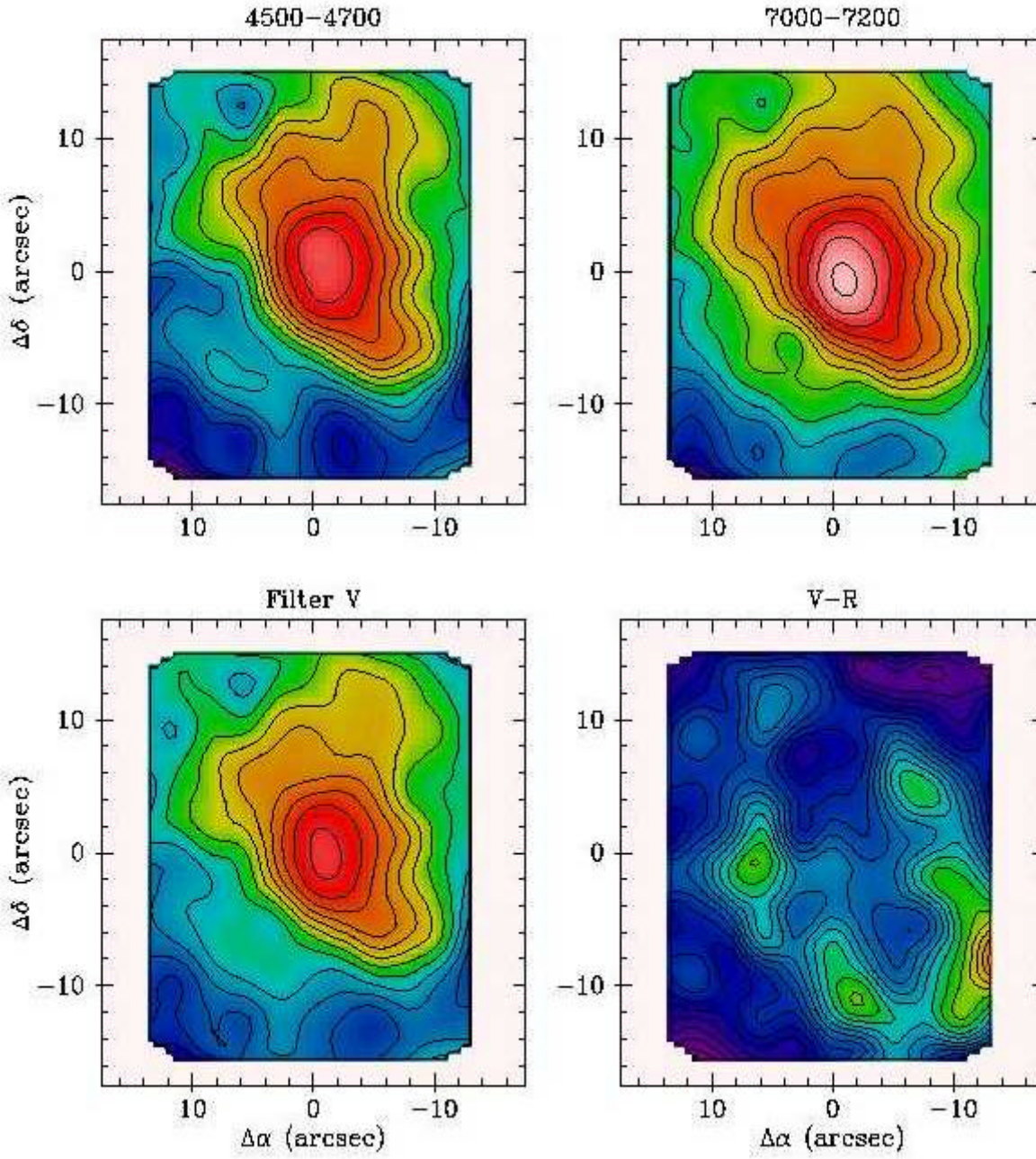
The BCDs Sample

Table 1: **The BCDs sample**

GALAXY	Other Names	Distance (Mpc)	GALAXY	Other Names	Distance (Mpc)
Haro 15	Mkn 960	86.0	Mkn 33	Haro 2	20.5
Tololo 0127-397		64.0	Mkn 35	Haro 3	13.9
UM 417		36.0	Mkn 36	Haro 4	08.0
Mkn 370	NGC 1036	12.9	UM 462		14.0
Mkn 600		15.0	II Zw 70	Mkn 829	17.1
Cam 0341-4045		60.0	II Zw 71	UGC 09562	17.6
Mkn 1089	NGC 1741	54.2	I Zw 123	Mkn 487	10.9
Mkn 1090		53.2	Mkn 297	NGC 6052	64.3
II Zw 33	Mkn 1094	37.4	HL 293B		23.4
II Zw 40	UGCA 116	10.1	Mkn 314	NGC 7468	31.1
Mkn 5	UGCA 130	13.3	Mkn 527	NGC 7518	50.3
Haro 1	NGC 2415	50.2	III Zw 102	NGC 7625	25.0
Mkn 86	NGC 2537	07.0	Mkn 324	UGCA 439	24.7
Mkn 401	NGC 2893	22.2	III Zw 107	IV Zw 153	76.5

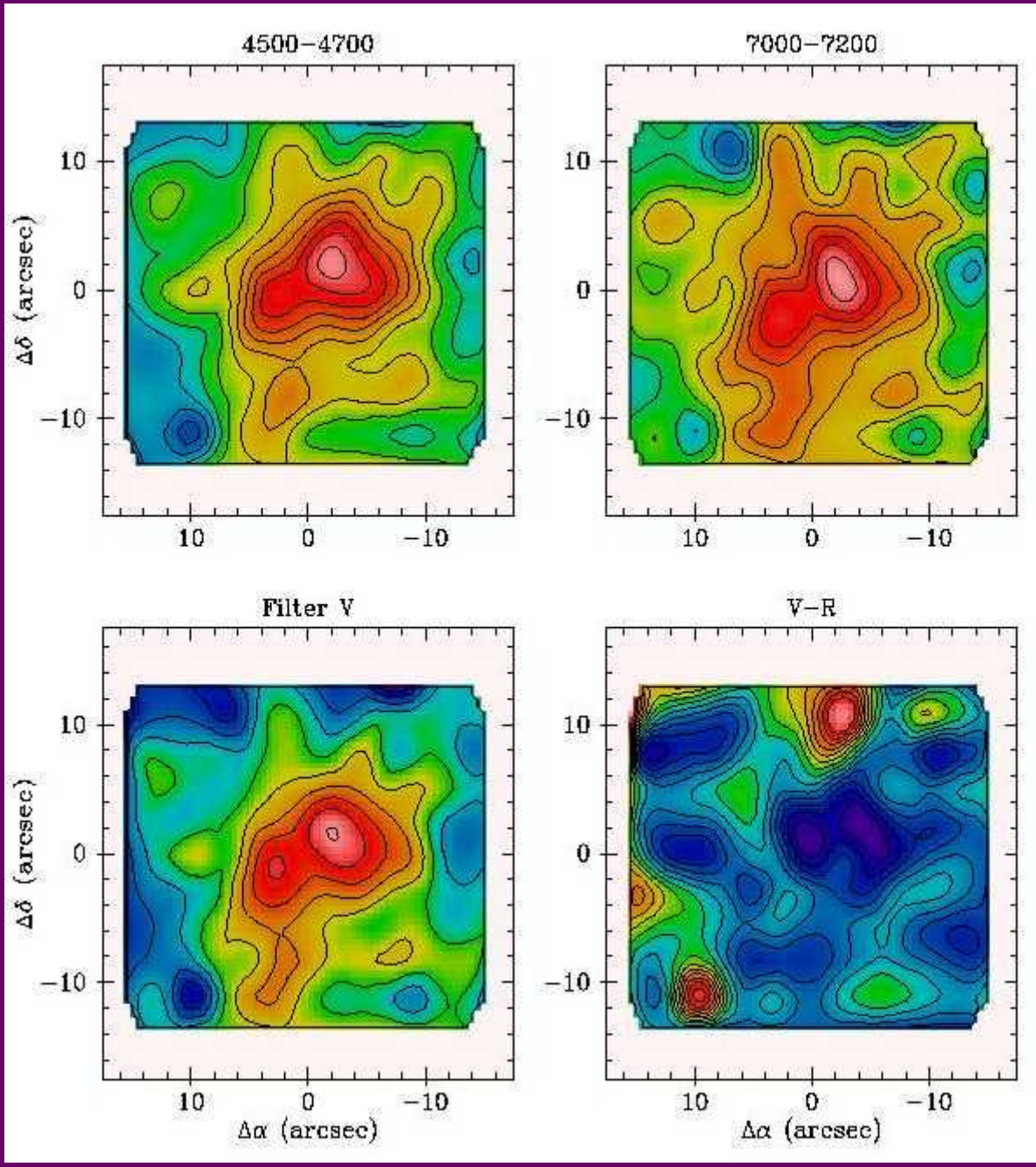
IIIZw102

- Continuum maps recovered from spectra in filters completely free from any emission line contribution
- Colour maps are in agreement with colour maps from direct image



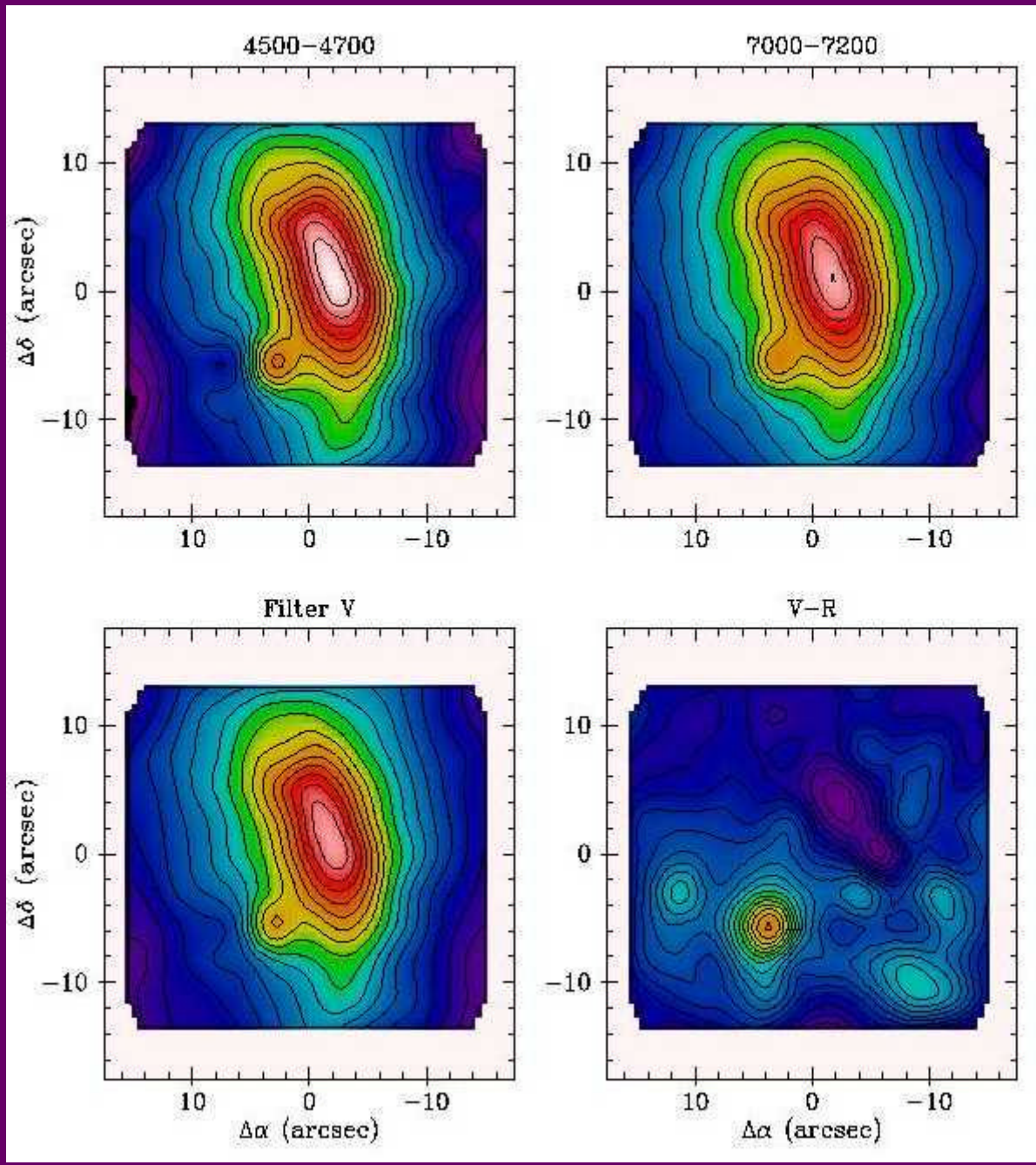
MRK297

- Continuum maps recovered from spectra in filters completely free from any emission line contribution
- Colour maps are in agreement with colour maps from direct image



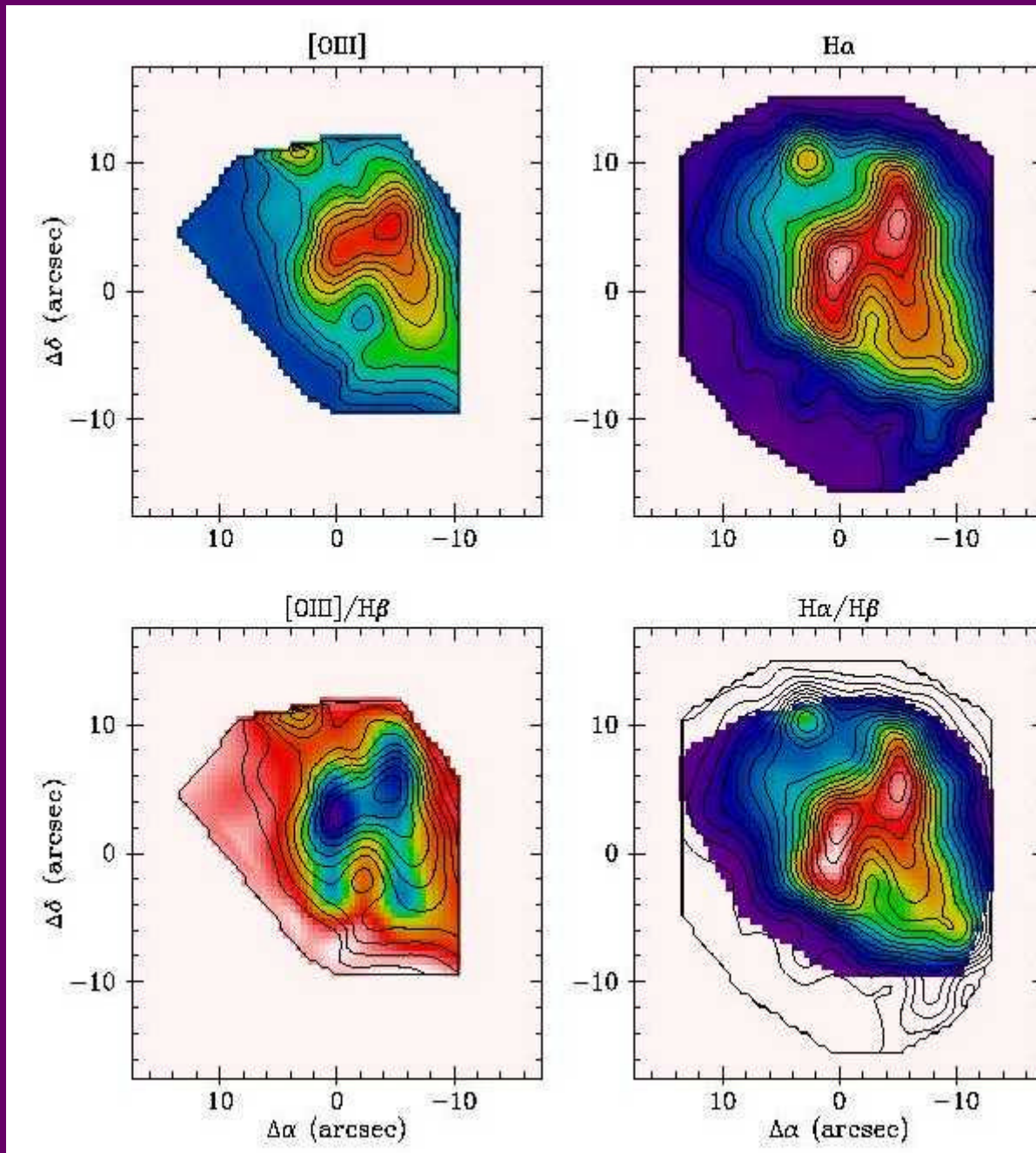
MRK370

- Continuum maps recovered from spectra in filters completely free from any emission line contribution
- Colour maps are in agreement with colour maps from direct image



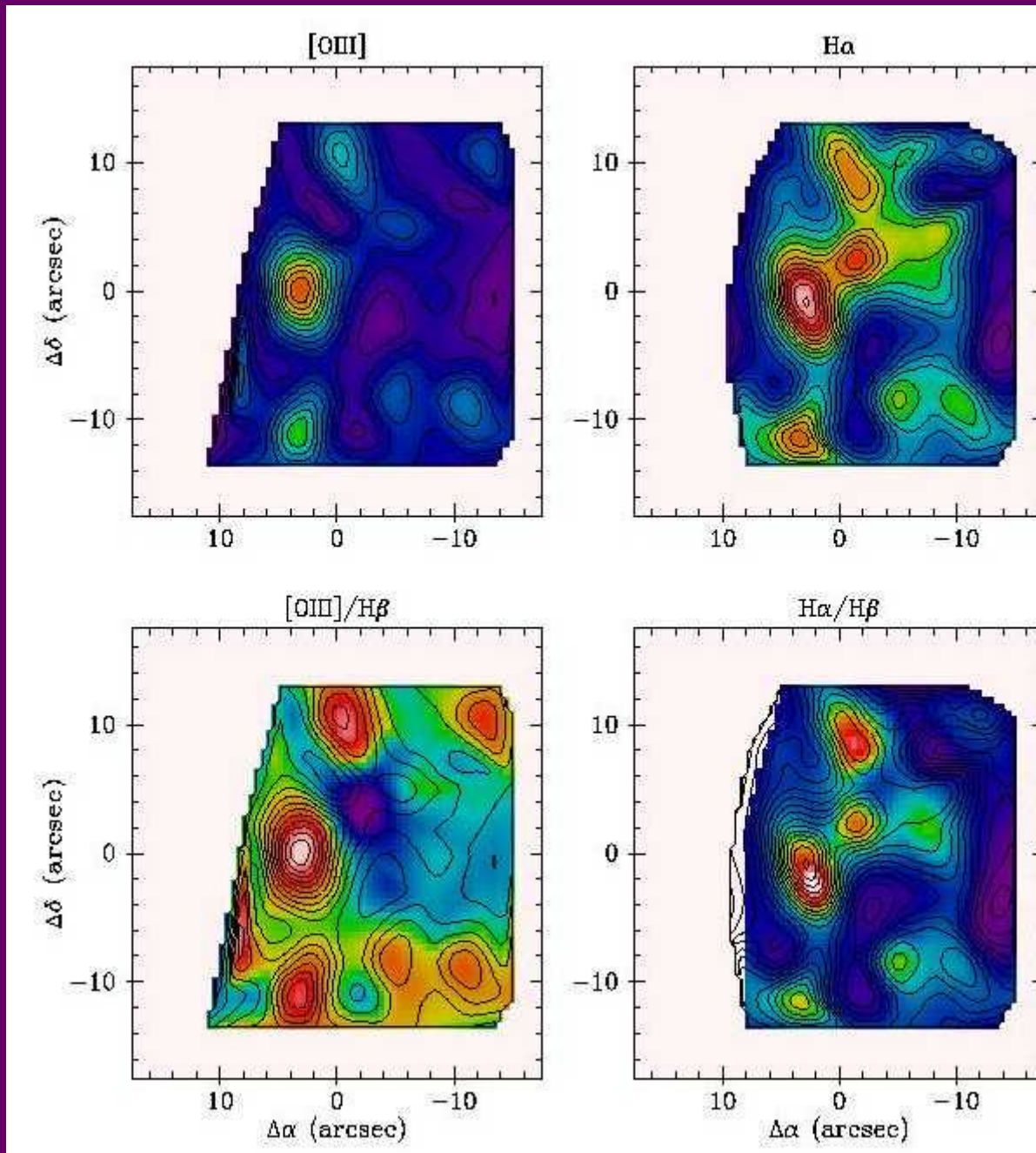
IIIZw102

- The morphology of emission and contina is different
- The ionisation and extinction peaks are not always coincident with emission peaks



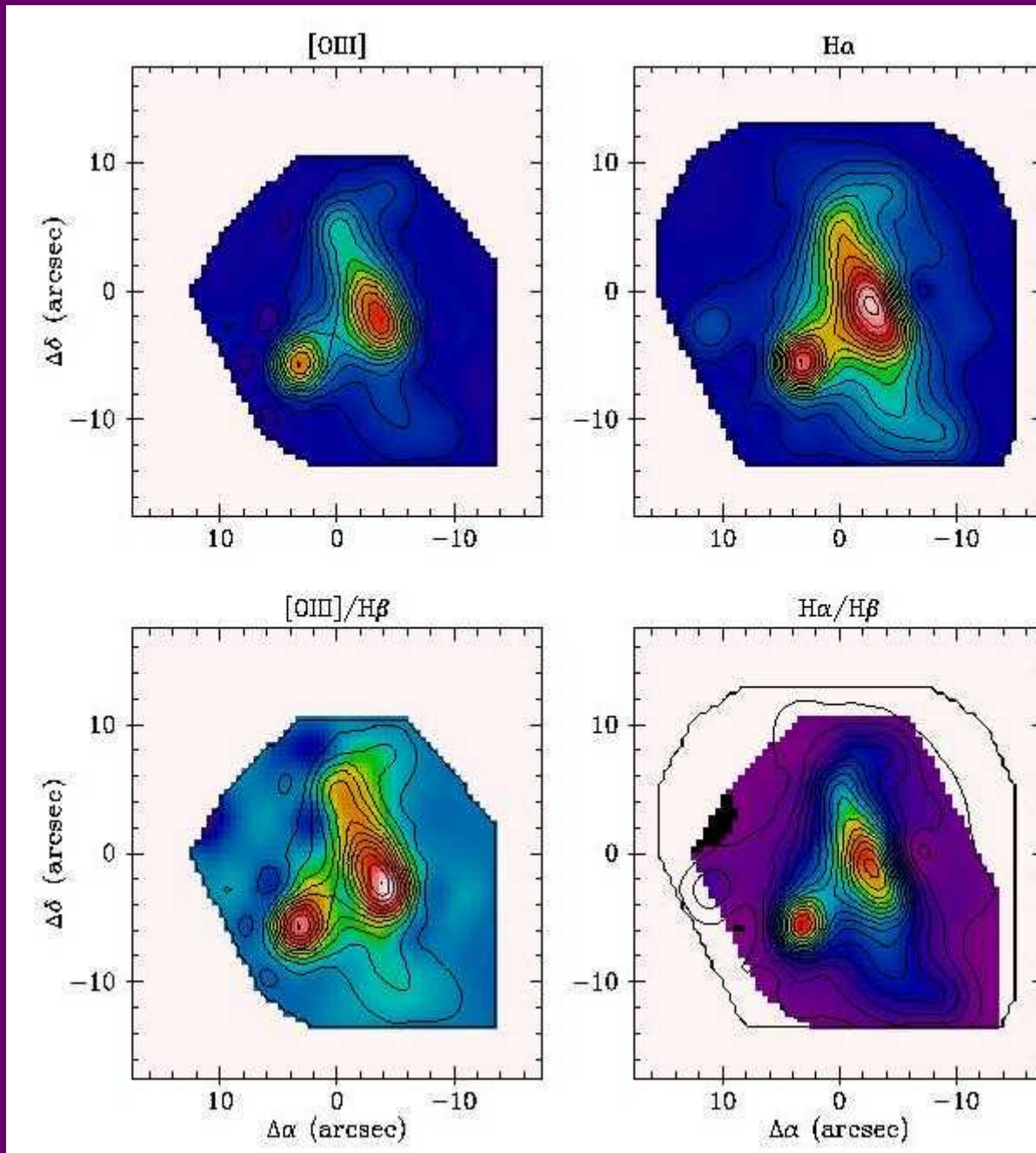
MRK297

- The morphology of emission and contina is different
- The ionisation and extinction peaks are not always coincident with emission peaks

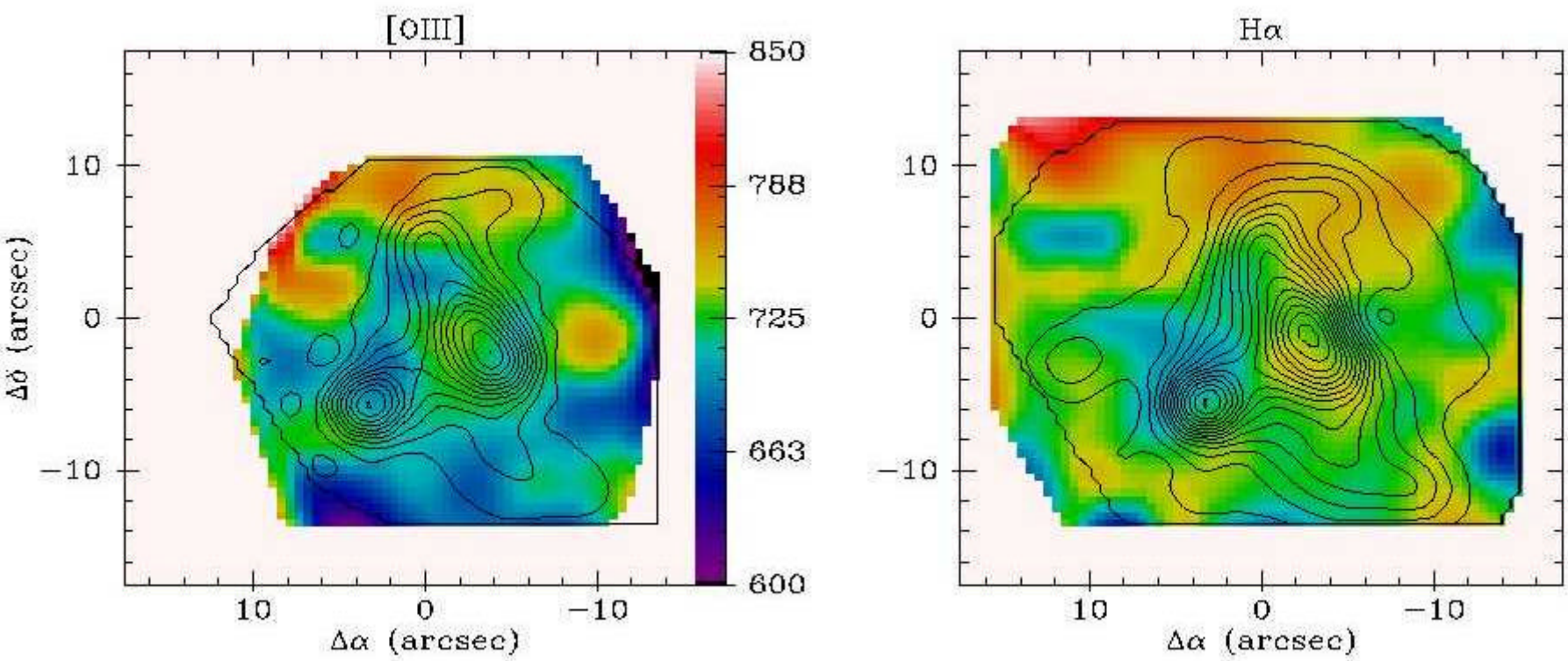


MRK370

- The morphology of emission and contina is different
- The ionisation and extinction peaks are not always coincident with emission peaks

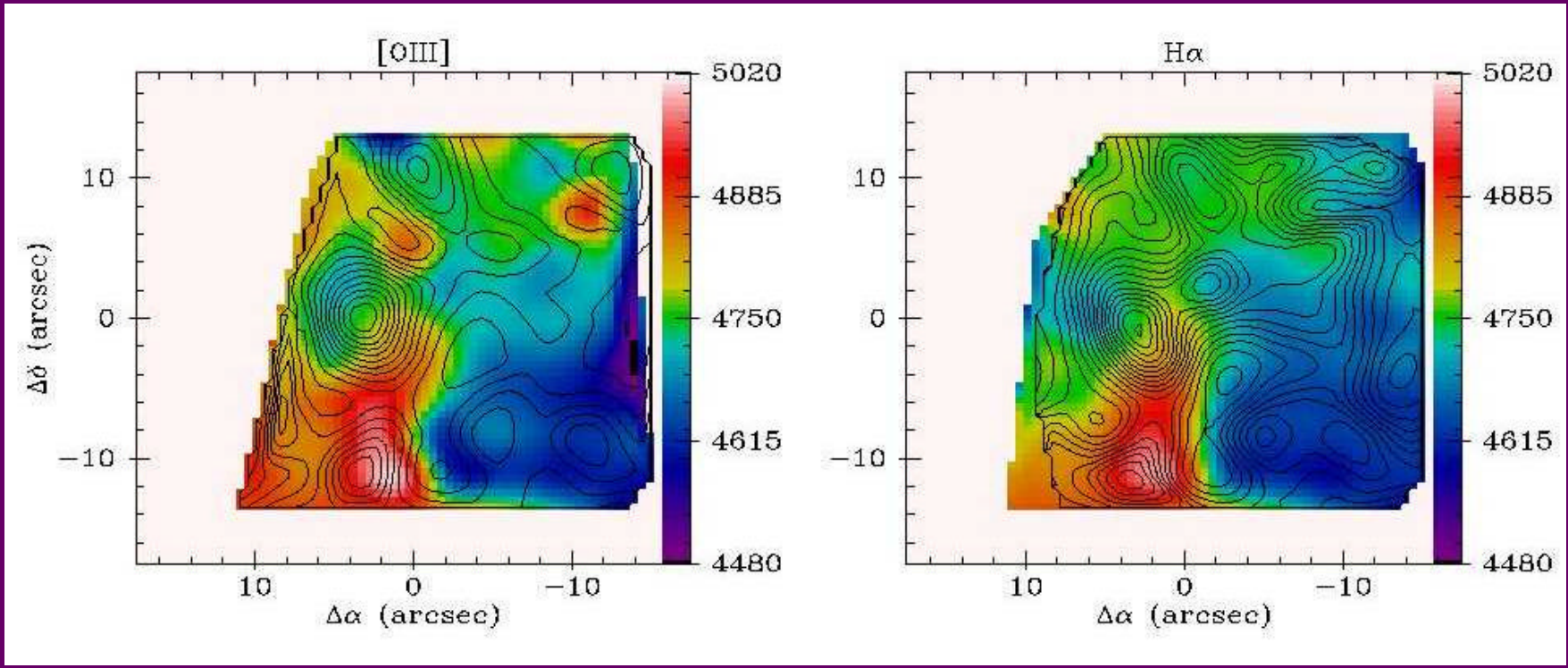


MRK370 ionised gas kinematics



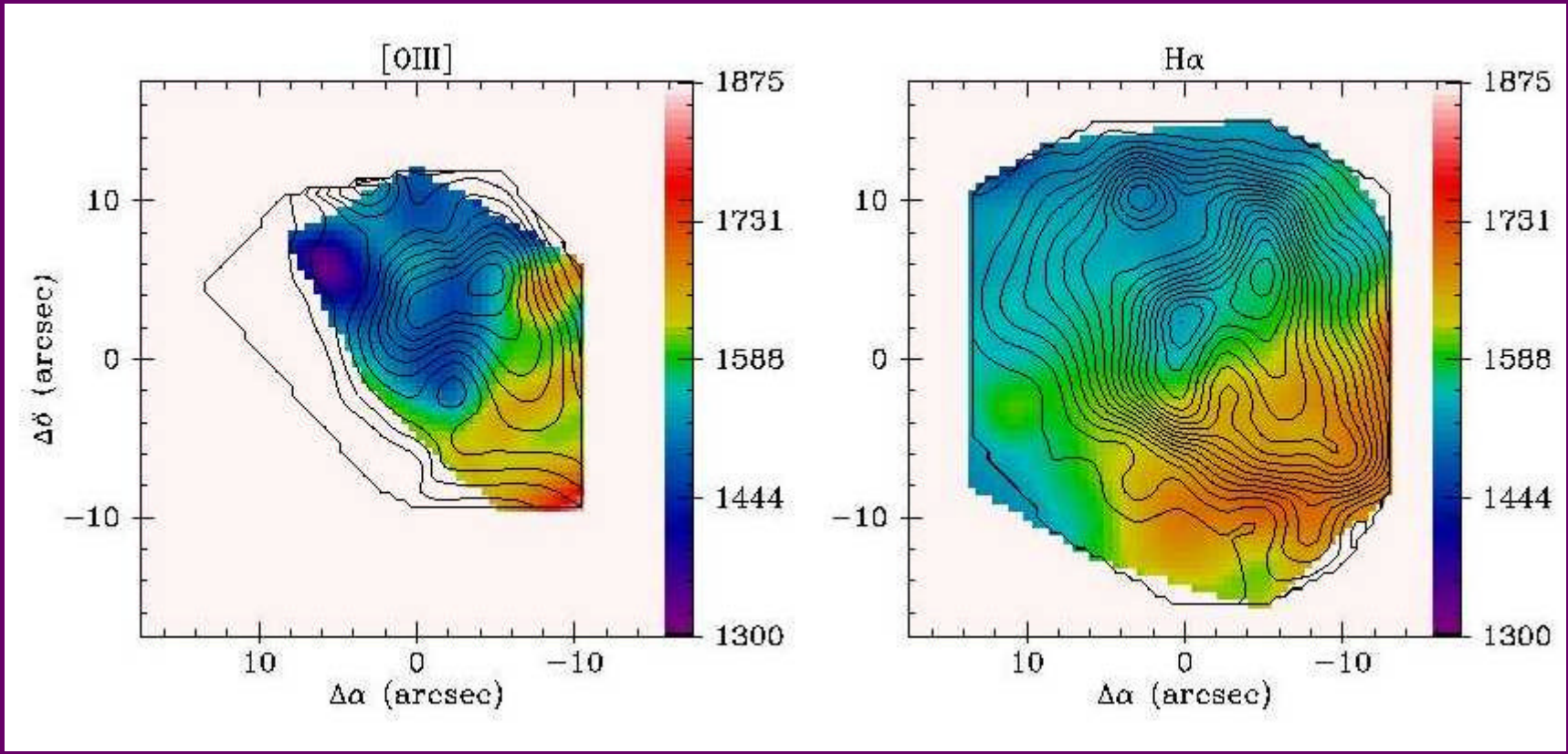
- Local gradient of velocities between continuum peaks.

MRK297 ionised gas kinematics



⇨ **Large gradient of velocities at the south of the continuum peaks.**

IIIZw102 ionised gas kinematics



- The velocity field is similar to a normal velocity field for a rotating disk.

CONCLUSIONS

- IFS garantees a great homogeneity in the data
- IFS allow to correct the effects of Differential Atmospheric Refraction
- Fitting the spectra, IFS allow to generate Hb maps without stellar absorption
- Extinction peaks are not always coincident with emission line peaks
- IIIZw102, Mrk297, and Mrk370 show ordered motions