5.11 Tenerife Team (IAC)

Team Leader	Dr. Evencio Mediavilla
Address	Instituto de Astrofisica de Canarias, 38200 La Laguna, Tenerife, Spain
email	emg@iac.es
web site	www.iac.es

Staff	Name	Degree	Status	%	Work Package
1.	Evencio Mediavilla	PhD	Univ. lecturer	50	1.4, 1.7, 2.3, 2.5, 3.6, 3.11
2.	Santiago Arribas	PhD	staff astronomer	10	1.4, 1.7, 2.5
3.	Casiana Muñoz	PhD	staff astronomer	33	1.3, 1.4, 2.3, 3.6
4.	Begoña García-Lorenzo	PhD	associate astronomer	25	1.4, 1.7, 2.3, 2.5
5.	Jose A. Acosta	PhD	senior postdoc	25	1.4, 2.3, 2.5
6.	Ramon García	PhD	univ. lecturer	25	1.2, 3.6

Local team description:
The IAC team started building 3D instrumentation based on the use of optical fibres for the telescopes of La Palma Observatory in 1988. Since then we have built several 3D instruments: HEXAFLEX (1991, ApJ, 369, 260), a pioneer instrument used at the WHT; HEXAFLEX-II (1994, SPIE Proc., 2198, 75), an improved version of HEXAFLEX for the NOT; 2D-FIS (1994, SPIE Proc., 2198, 75), a fibre based system connecting the Auxiliary Port of the WHT with the two arm spectrograph ISIS; and INTEGRAL (1998, SPIE Proc., 3355, 821), a common-user instrument at the WHT. This activity has been tightly linked to the study of the central regions of galaxies (kinematics of the stellar component and of the ionised gas in AGNs, ULIRGs, and Blue Compact Dwarf galaxies; physical conditions of the ionized gas; stellar population studies) and, more recently, to the observation of gravitational lenses (spectroscopy, extended emission, spectroscopic monitoring, differential extinction).

Our instrumental projects are based on practical solutions adapted to the objectives of the scientific programmes described above. We have always had the purpose of obtaining scientific results as soon as possible. Accordingly, when the instruments were built, we have developed programmes and routines to deal with the large quantity of data generated by the 3D observations. We have developed INTEGRAL, a software package and manual for acquiring, reducing and analysing 3D data based on IRAF routines. Thanks to this effort our instruments have routinely produced scientific results. This experience helped us to construct a common-user instrument, INTEGRAL, available to the scientific community since 1998.

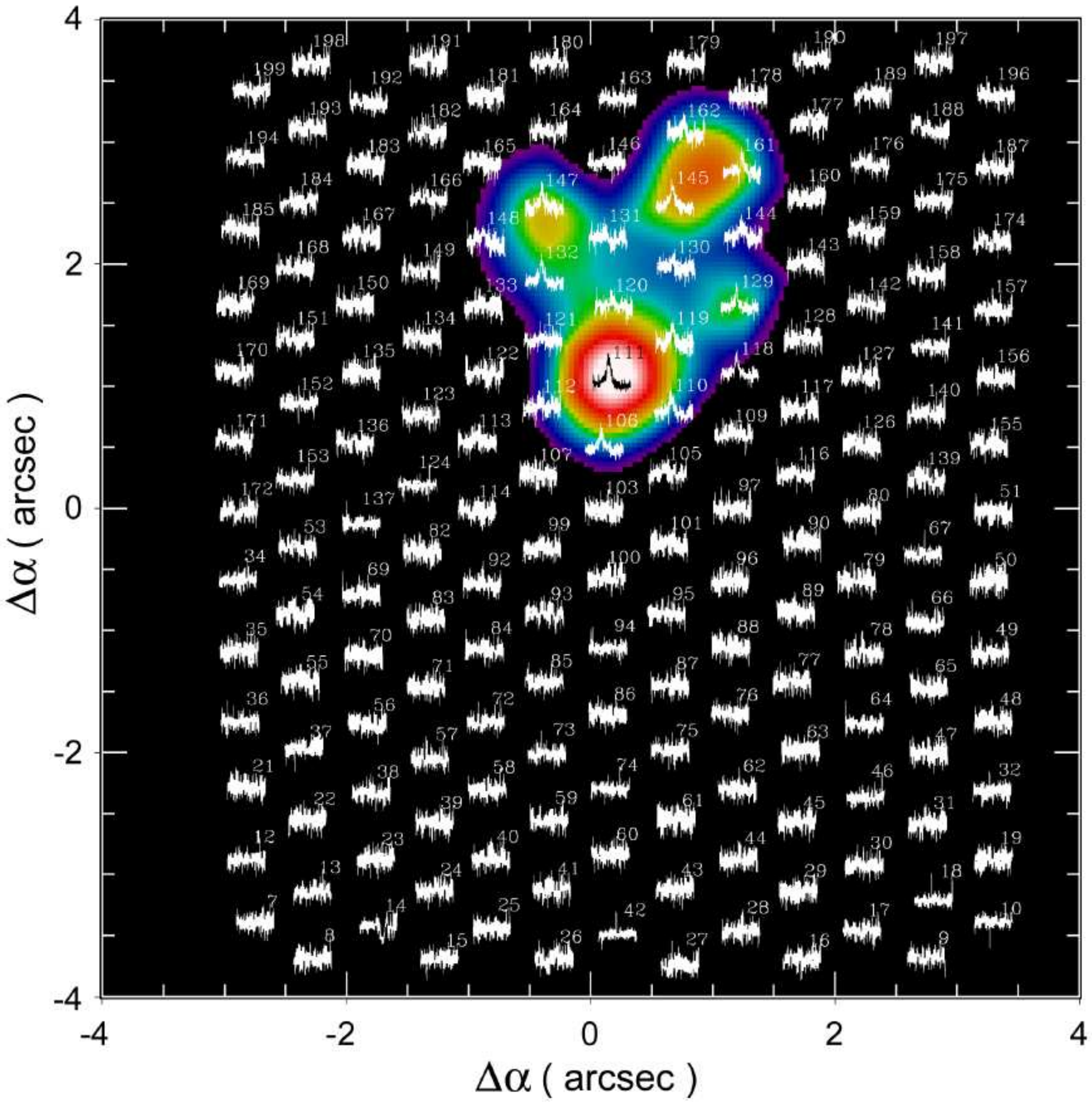
Thus, our team can provide to the network experience combining the points of view of the instrument designer and the astronomer. Specifically, we can offer the feedback to the astronomers based on our experience in using INTEGRAL. We have links with other groups, in particular we are collaborating with the AIP team exchanging observations with INTEGRAL and PMAS. In collaboration with LYON we have also planned observations of Seyfert Galaxies with OASIS and INTEGRAL to exploit the complementarity of both instruments.

We have also tried to develop innovative scientific uses specifically based in the use of 3D instrumentation. In this way we have proposed new techniques for performing a posteriori corrections of the differential atmospheric refraction or for achieving the same objectives as coronagraphy but with 2D spectroscopy. At the present time we are developing TWIN, a system of twin integral field units for acquiring simultaneously the object and a reference (for PSF or calibration), useful for observing crowded fields.

Significant recent publications:

Del Burgo, C., Mediavilla, E., Arribas, S. 2000, "*High Ionization Clouds in the Circumnuclear Region of M31*", ApJ, 540, 74.

Mediavilla, E.,, Arribas, S.; del Burgo, C.; Oscoz, A., Serra-Ricart, M., Alcalde, D., Falco, E.E., Goicoechea, L.J., Garcia-Lorenzo, B., Buitrago, J. 1998, "*2D Spectroscopy Reveals an Arc of Extended Emission in the Gravitational Lens System Q2237+0305*" ApJLetters, 503, L27



3D spectroscopy of the gravitational lens system Q2237+0305 (Einstein Cross) obtained with the INTEGRAL fibre system at the 4.2m William Herschel Telescope in subarcsecond seeing conditions. Although the four components appear clearly separated in the continuum intensity maps, the intensity map of the CIII] $\lambda 1909$ line exhibits an arc of extended emission. This result is interpreted as a gravitational lens image of the extended narrow line region of the source, which has a size of about 400 h^{-1} pc (Mediavilla et al., 1998, ApJ, 503, L27).