Network for UltraViolet Astronomy

(NUVA)

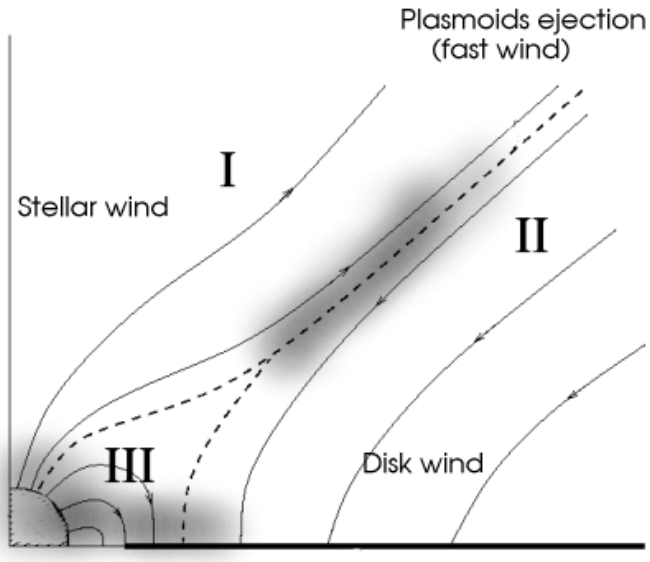
RATIONALE: Why UV Astronomy?

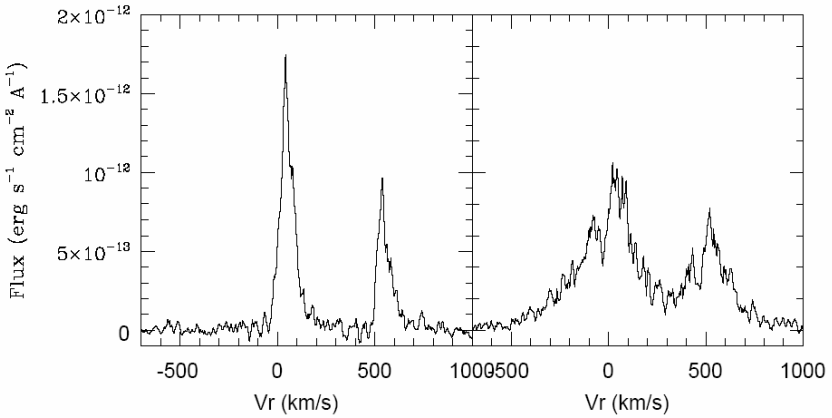
- The UV range supplies a richness of experimental data which is unmatched by any other domain for the study of ***hot plasma with temperatures in between 10^4K and 10^5K***.

- Plasma at these temperatures is observed in ***all astrophysical environments*** extending over:
  - hot stars, cool stars and planetary atmospheres
  - gaseous nebulae
  - the warm and hot components of the ISM
  - circumstellar material
  - the close environment of black holes of all masses from X-Ray Binaries to Nuclei of Galaxies
  - accretion disks
  - The intergalactic medium.

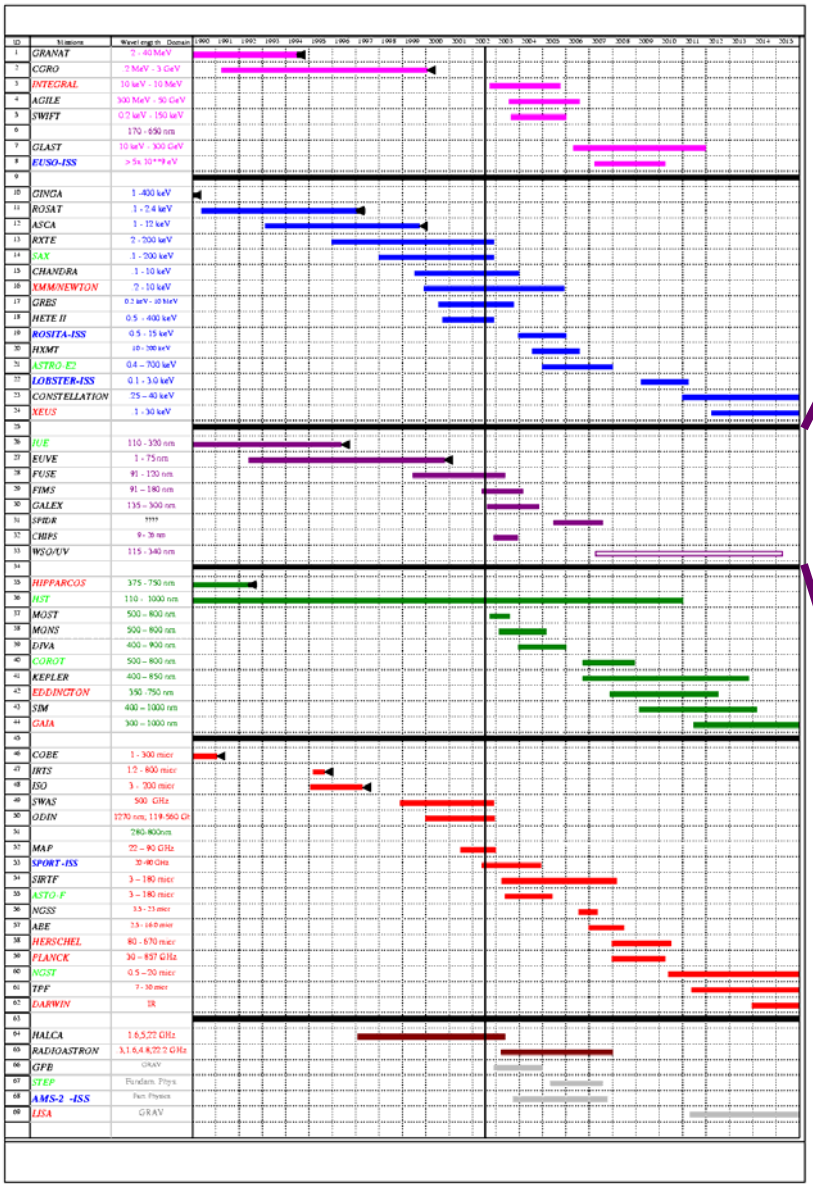
- In addition the ***electronic transitions of the most abundant molecules***, such as H_2 or CO, are observed in this range which is also the most sensitive to the presence of large molecules such as the PAHs.

An example: on the source of flares:





In complex environments the kinematical signature is Instrumental to identify the source of flaring



Facility (lifetime)	Type of Instrument	Spectral Range (nm)	Field of view (arcsec)	Spectral Resolution R	Spatial Resolution
HST (1990-...)	Imaging-ACS(HRC)	200-1100	26x29	Broad band filters (FWHM ~ 40nm)	0."027 pix^{-1}
	Imaging-ACS(SBC)	115-170	31x35		0."032 pix^{-1}
	Imaging-STIS	115-~350	25x25	Lyα, CIII], MgII Continuum filters	0."0246 pix^{-1}
	Spectroscopy-ACS	115-390	Grism	100	
	Spectroscopy-STIS	115-310	Long-Slit (52")	~15000	0."03 pix^{-1}
				~1000	
		115-315	(echelle)	140000	
				~50000	
FUSE (1999-...)	Spectroscopy	90.5-118.7		20000±2000	
GALEX (2003-2005)	Imaging	135-300	All-sky	Two broad bands: NUV(180-300) and FUV(135-180)	3"-5"
	Spectroscopy	135-300	(grism)	100	

Table 1: The main UV facilities working in 2003

But… the future of UV astronomy seems rather dark….

In spite of the need of access to the UV range to understand some **key problems** as, for instance:

- the physics of the formation of stars and planetary systems,
- and the cosmological and chemical evolution of the intergalactic medium up to z=2
- the physics of accretion and outflow

… AND MANY MORE…

NUVA OBJECTIVES:

- **Formulate and Operate** an UV astronomy network to plan and execute a road mapping exercise:

  – NUVA will map and review the instrumental performance of existing and near future capabilities in the UV on a global scale.

  – NUVA will assess for the future needs and develop a perspective for the future at European scale.

Preliminary Web site: http://www.mat.ucm.es/~aig/NUVA/

PARTICIPANT	INSTITUTION	COUNTRY	INSTR.	COORD.
Ana I Gómez de Castro	UCM, Madrid	Spain		PI,AVO
Norbert Kappelmann	IAAT, Tuebingen	Germany	Spectrosc.	
Michel Dennefeld	IAP	France		Ground-Based
Isabella Pagano	INAF, Catania	Italy		High Energy
Martin Barstow	UL, Leicester	UK	Detectors	
Huib Henrichs	UvA, Amsterdam	The Neetherlands		
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Domitilla de Martino	INAF, AOC,Naples	Italy		
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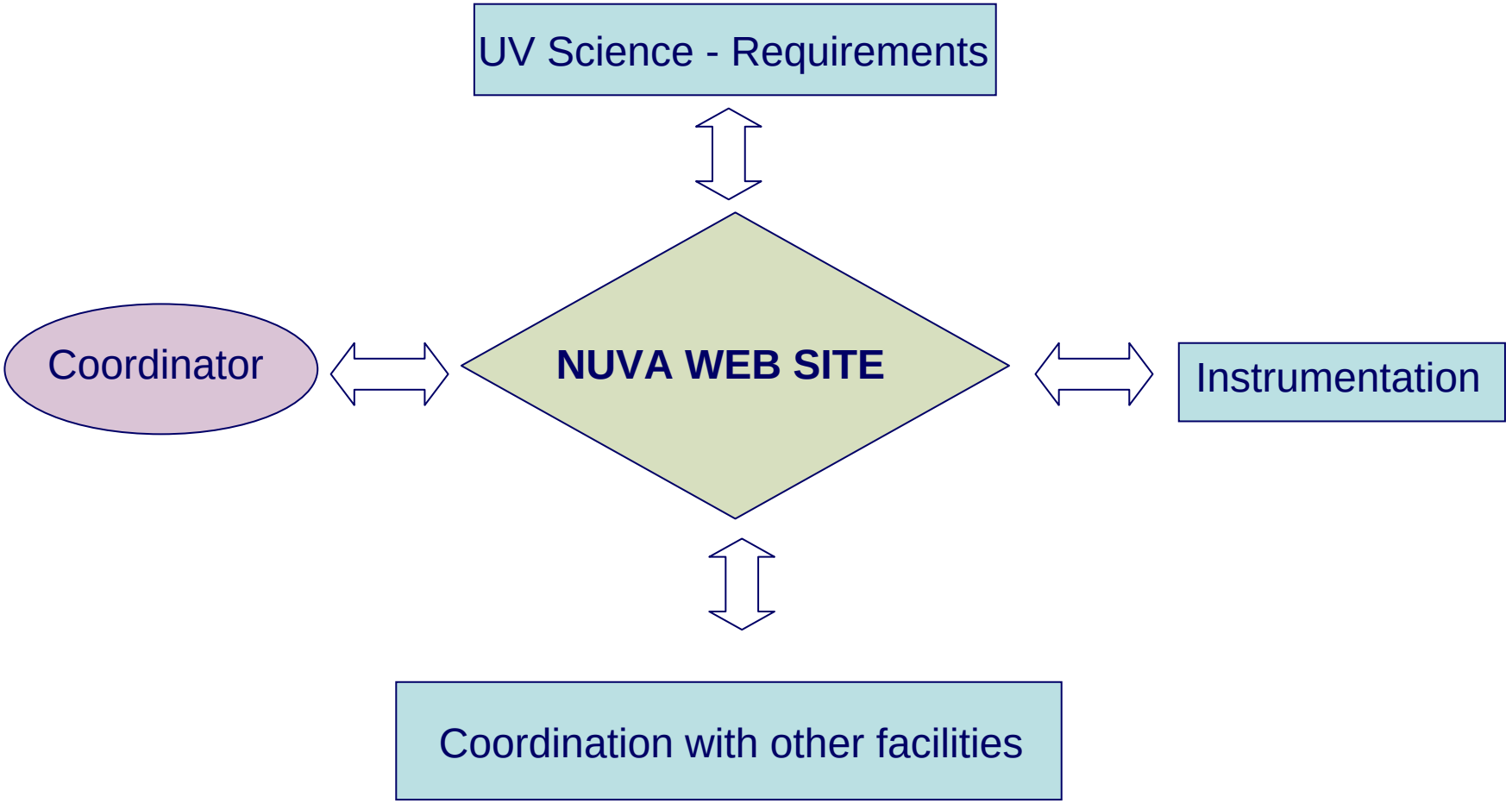
Willem Wamsteker	VILSPA, Madrid	Spain		Space Agencies
Boris Shustov	INASAN, Moscow	Russia		Russian Space Agency
Nicholas Steshenko	CAO, Crimea	Ukraine	Spectropolarimetry	


UV Science - Requirements
Coordinator
NUVA WEB SITE
Instrumentation
Coordination with other facilities

WORK PLAN (Jan'04-June´05)

- Generation of the European Working Groups (until April'04)
  (as today 100 people involved)

- Development of a Programable Web site suitable to exchange information (until Sept'04)

- 1st Meeting – Madrid (Sept'04) --- Seting-up the basics for the interaction

- 2nd Meeting – April'05 --- Summarizing the Results

BUDGET:
2 meetings-14people: 30 kEuro
Web/Support/Sec: 30 kEuro

1. Public release of the Web site.
2. Final Report – Road map to UV astronomy

June'05

Afterwards…

1. Euro-Conference on the future of UV astronomy
2. A fully developed Web site (with methods for data analysis) devoted to UV astronomy

Mission	Type of Observations	Number of Observations	Spectral Range (nm)	Main Characteristics
IUE	Spectroscopy	>10,4000	120-335	Aprox. 10,000 sources
Copernicus	Spectroscopy		90-156 & 165-315	551 sources, mostly bright stars
EUVE	Spectroscopy		7-76	300 sources, mostly Galactic
HUT	Spectrophotometry	491	91.2-185	Aprox 300 sources.
UIT	Imaging	1579	120-330	259 sources
WUPPE	Spectroscopy&Polarimetry	467	140-330	169 sources
BEFS/ORPHEUS	Spectroscopy		90-190	75 objects
IMAPS/ORPHEUS	Spectroscopy	600	95-115	10 hot stars
TUES/ORPHEUS	Spectroscopy	239	90-140	62 targets

Table 2: UV data in the MAST archive (from URL:archive.stsci.edu)

Our questions to the board:

1. OPTICON funds are going to be spent in “distributed activities” (trips) and “centralized activities” (Coordination and Web). How can this be implemented within the OPTICON finantial structure?
2. For obvious reasons, the core activity will be concentrated in the first 18 months… again… how can this be implemented within the current scheme?
3. A fair fraction of the team has not “associated national banks” how do we manage the travelling?
4. A rational (and cheap) web-coordination support may come from the UCM but no-overheads will go to it. I have difficulties to make UCM officials understand this issue.