ASPIC & GAZPAR : National ressource for observations in Astronomy - Astrophysics @ CeSAM

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Abstract

The Astrophysical Data Center of Marseille (Centre de données Astrophysiques de Marseille -CeSAM) is a center of expertise which includes all activities at LAM processing, analysis, archiving and distribution of data from large-scale observation programs, in order to make them available to the community.
CESAM enables the production of high-value data , through the development or integration of specific softwares (GAZPAR) and make them available to the scientific community through generic tools and / or specific projects developed within the framework scientists (ASPIC).

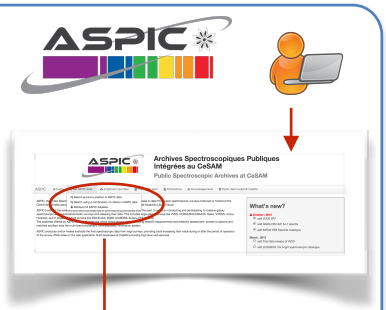
CeSAM [1]
Laboratoire d'Astrophysique de Marseille (LAM) gathered their forces working in computing for Astrophysics in the Astrophysical Data Center of Marseille (Centre de données Astrophysique de Marseille -CeSAM). CeSAM is developping softwares, WEB based applications, databases, numerical simulations and Image processing modules. The developments are made with respect to the Virtual Observatory standard.

CeSAM : http://cesam.lam.fr

Archive of Spectra Publicly available In Cesam (**ASPIC** [3]) uses recognized LAM scientific and CeSAM (Centre de donnéeS Astrophysiques de Marseille) technical expertise to make available to the scientific community data and tools for spectroscopic massive programs.

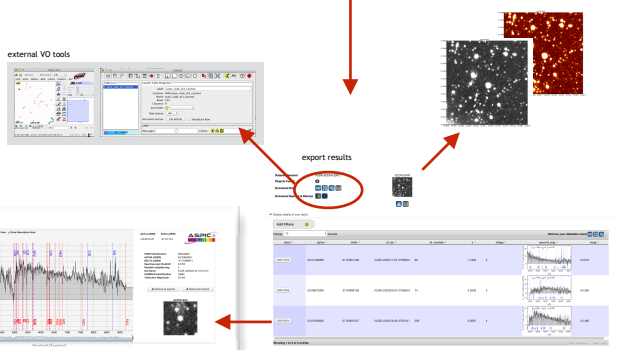
Many deep galaxy surveys led at LAM or in which LAM is involved, such as VVDS, zCOSMOS, VIPERS, VUDS, EUCLID, PFS, Athena, demonstrate the level of expertise and international acknowledgement of LAM in this area. In each of these projects ASPIC has a major role : responsible for the development of the redshifts measurement and validation pipeline, 1D spectra production, spectra archiving.

ASPIC proposes to any similar program, originating from any country/institute, even of smaller extent, to produce and make available the final spectroscopic data by providing tools for increasing their value and / or after the period of operation of the mission or of the observer program through a web application (ANIS [4]) with high level services.



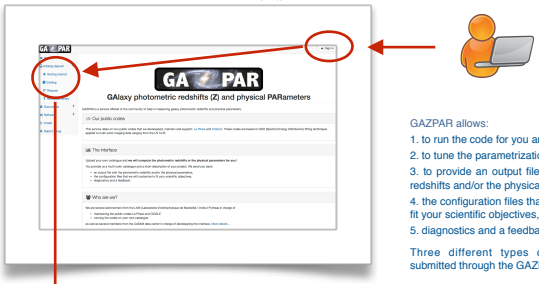
Spectroscopic data available in ASPIC :

- **VVDS Final release** : VIMOS VLT Deep Survey *(Le Fèvre+, 2013)*
- **VUDS** : The VIMOS Ultra Deep Survey Data Release 1 (Tasca+, 2016)
- **zCOSMOS** : The zCOSMOS 10k-bright spectroscopic sample *(Lilly+, 2009)*
- **GAMA** : Galaxy and Mass Assembly data release 2 (DR2) *(Liske+, 2015)*
- **6dFGS** : final redshift release (DR3) *(Jones+, 2009)*



GAZPAR [2] is a service offered to the community to help in measuring galaxy photometric redshifts and physical parameters.

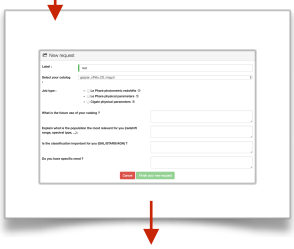
This service relies on two public codes that we developped, maintain and support: **Le Phare** [5] and **CIGALE** [6]. These codes are based on SED (Spectral Energy Distribution) fitting techniques applied to multi-color imaging data ranging from the UV to IR.



GAZPAR allows:

1. to run the code for you and you save time
2. to tune the parametrization of the code
3. to provide an output file with the photometric redshifts and/or the physical parameters,
4. the configuration files that we will customize to fit your scientific objectives,
5. diagnostics and a feedback.

Three different types of request can be submitted through the GAZPAR interface :



Le Phare photometric redshifts

The photometric redshift is a distance measurement based on the galaxy colors. The accuracy of the measurement will depend on the number of bands you are using and their depth. We use the tool Le Phare that we develop and which is public. The method is based on a template fitting method with several possible tunning.

Le Phare physical parameters.

When the redshift is known, you can use the multi-color data to establish the physical parameters of the galaxy. We obtain the physical parameters by fitting the stellar component of the Spectral Energy Distribution (SED). We propose to run the standard configuration of the code on your catalogue: BC03 templates with exponential and delayed SEDs, 2 metallicities, 3 attenuation curves, Chabrier IMF. Since this method is used in numerous studies, this job is useful to get results comparable to the literature.

Physical parameters with CIGALE

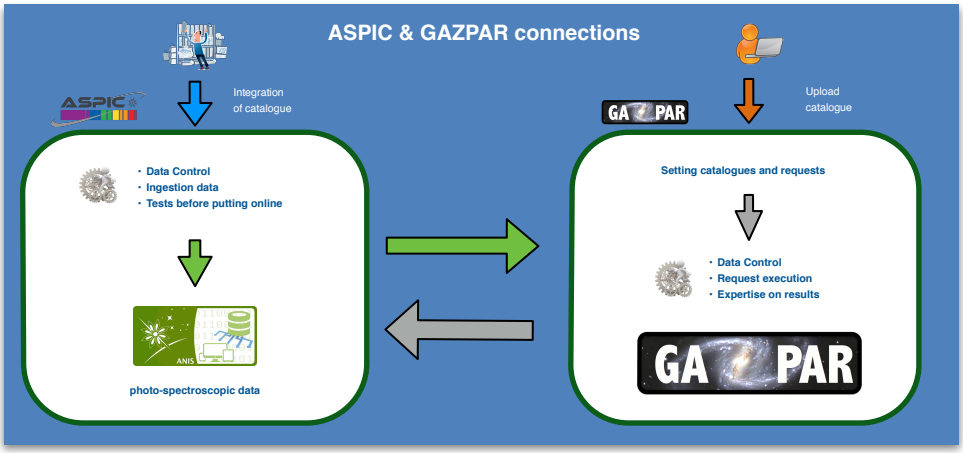
CIGALE is also a template-fitting code. However, it has the following specificity:

- the fit could be done using FIR data;
- the energy balance between the stellar light absorbed by dust and the one reemitted in FIR is conserved (except for a modified black body for which it is optional);
- an AGN component is included;

Codes being integrated

The integration of two other codes is ongoing. Another code of template fitting based on photometric data is in the process to be integrated: **HyperZ** [7]. Similarly, the **BEAGLE** [8] photometric/spectroscopic tool will also be integrated to GAZPAR in 2017.

ASPIC & GAZPAR connections



REFERENCES

[1] CeSAM	ADASS XX, vol 442, 17
[2] GAZPAR	ADASS XXV, poster #105
[3] ASPIC	ADASS XXV, poster #P076
[4] ANIS	ADASS XXIII, vol 485, 195
[5] Le Phare	Arnouts et al. (1999, MNRAS 310, 540)
	Ilbert et al. (2006, A&A 457, 841)
[6] CIGALE	Burgarella et al. (2005, MNRAS 360, 1411)
[7] HyperZ	Bolzonella M., Miralles J.-M., Pelló R., 2000, A&A, 363, 476
[8] BEAGLE	Chevallard & Charlot, 2016, MNRAS, 462, 1415

ACCESS

ASPIC : http://cesam.lam.fr/aspic
GAZPAR : http://gazpar.lam.fr
Le Phare : http://lephare.lam.fr
CIGALE : http://cigale.lam.fr