

AVO Science Issues for Jan 2005 Demo

Galactic and Stellar

◆ Galactic

- Merging Clusters

◆ Stellar

- Late cases of stellar evolution

Technical Stress

- ◆ Registry: how do we 'discover' relevant data resources?
 - Registry std v0.9
- ◆ Data Access:
 - DAL std v0.9
- ◆ ADQL:
 - DB queries – star case
- ◆ Grid-WS:
 - Compute resources
 - Storage resources
 - Distribution of processes

Merging Clusters

- ◆ Stellar populations of Low Luminosity AGN's

Selection of Clusters

- ◆ Identification of key clusters
 - Abell
 - Xray clusters
 - Clusters from large survey's
 - ◆ SDSS, CFHT, APM

Discovering Relevant Data

- ◆ Access, through registry, to key data sets
- ◆ Image data
 - 2MASS, DENIS, SDSS, ROSAT, NVSS, FIRST, GALEX, IRAS, HST, 2dF mentioned – also WFS, CFHT, Subaru, Spitzer
- ◆ Catalogue data
- ◆ Issues:
 - Combination of:
 - ◆ VOResource 0.9
 - ◆ SIAP access
 - ◆ Cone Search
 - ◆ Through Aladin
 - ◆ Through NED

Data generation

◆ Image selection

◆ Photometry

- From catalogues
- From images
 - ◆ SExtractor to generate catalogues
 - ◆ Photometric systems

◆ Spectroscopy

- Generation of equivalent broadband fluxes

The SED

◆ Photometric data

- range

◆ Spectroscopic data

- Include or not

◆ SED tool

- Complex: major s/w component
- Error handling

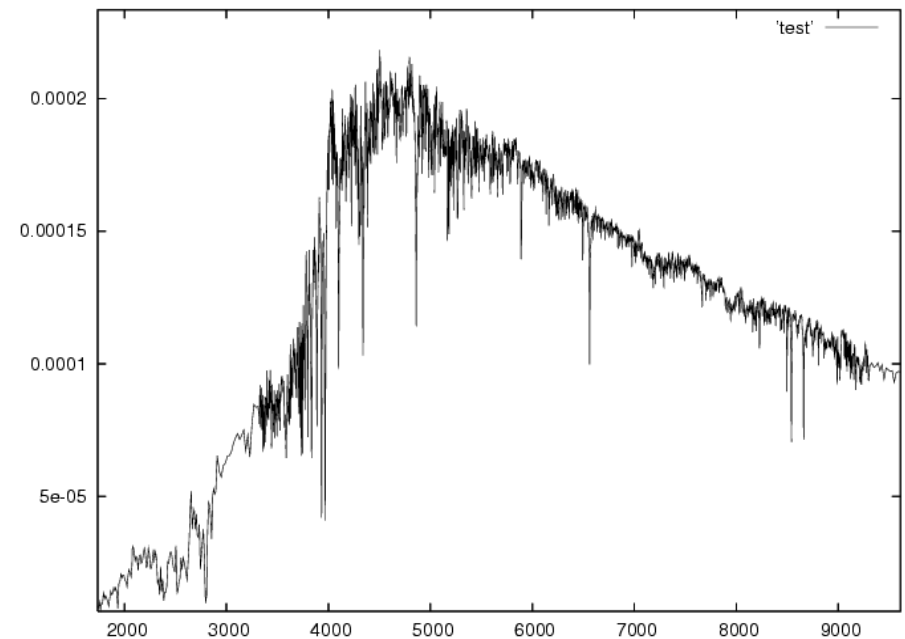
Stellar Populations

- ◆ Generation of spectral synthesis codes
 - Pegase
 - Galaxev (<http://www.cida.ve/~bruzual/bc2003>)
 - Starburst99 for active star forming regions/ galaxies
- ◆ Comparison of model with SED
 - Minimisation of errors
 - Rerun model
 - ◆ Tool to do this match of data to model

Pre-Computed Model Grids

◆ GALAXEV (version 2003)

- Grid of models
- Tools to manipulate the models provided
 - ◆ Spectral extraction
 - ◆ Smoothing
 - ◆ Dust
 - ◆ Photometric indices
 - ◆ Multiple bursts
 - ◆ Filter definitions



Starburst99

- ◆ Used for cases of star forming galaxies
- ◆ Web based access to models
 - <http://www.stsci.edu/science/starburst99/>
- ◆ Also available as source
- ◆ Input into Mappings photoionisation code
 - <http://cfa-www.harvard.edu/~lkewley/Mappings/>

Late Stellar Evolution

- ◆ AGB – PN transition
- ◆ PN Binary Central Stars
- ◆ Extragalactic PN

Late Stars

- ◆ IR selection of candidates
- ◆ ADQL queries of key data sets
 - 2MASS
 - MSX
 - UKIDSS
- ◆ 2MASS vs MSX queries: intermediate tables > GDW
- ◆ Issues of source numbers
 - > 250,000
- ◆ Sanity check
 - Repeat work using IRAS selected AGB/PN objects

Simbad interoperability

◆ AGB/PN candidates

- Reference (x-match) against SIMBAD
- (NED for extragalactic objects)

ExtraGalactic PN

- ◆ Spitzer IR data queries
- ◆ Difference imaging catalogues
 - x-match to imaging catalogues
 - Nature of sources: remove stellar contaminants

Main Tasks

- ◆ Registry
- ◆ Data Access
- ◆ Data Query
- ◆ Compute/Storage Grid
- ◆ Applications
 - SED tool
 - Spectral Synthesis Code
 - Colour indice generator
 - Comparison model/observation colours – best fit model