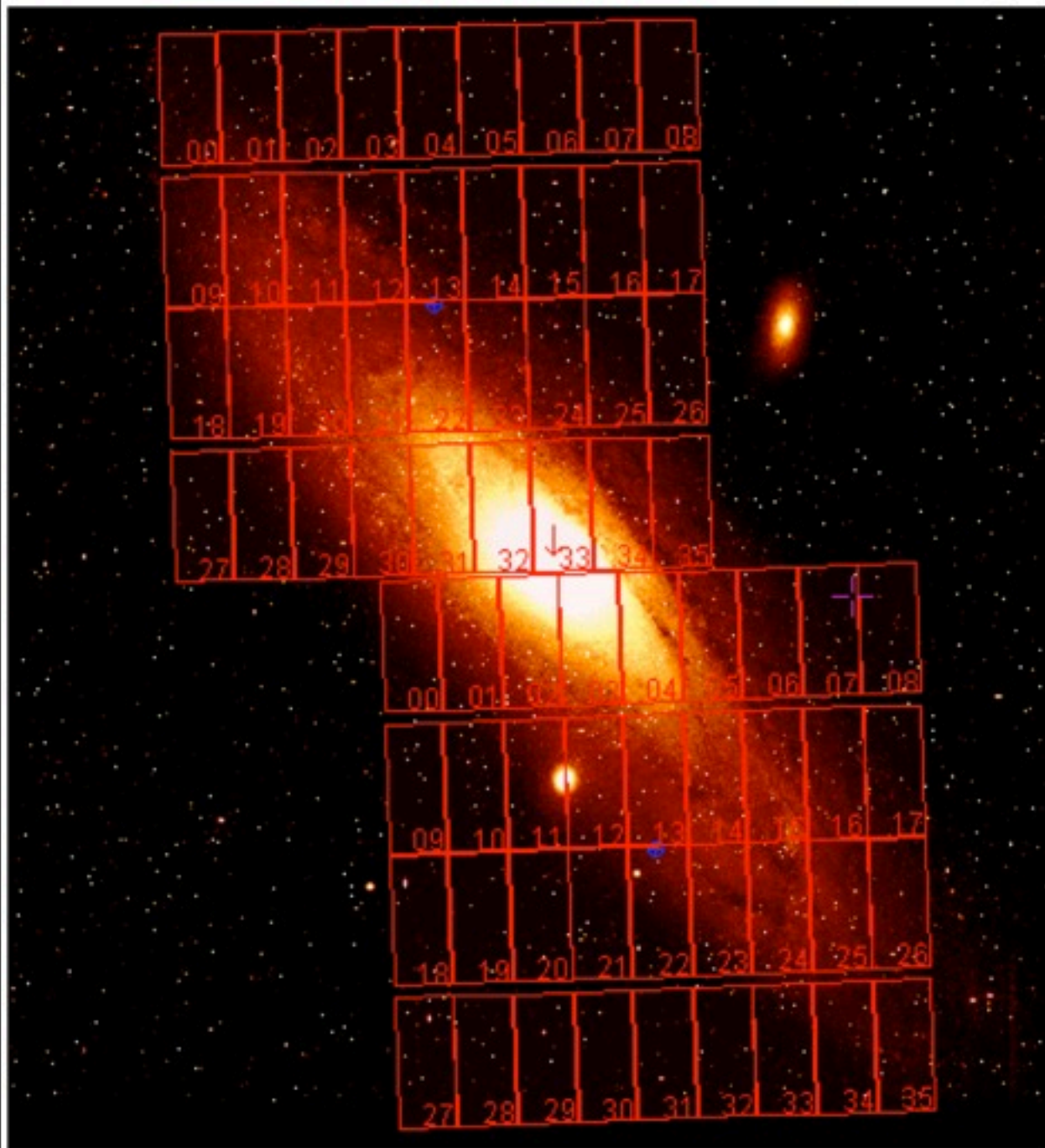# The POMME Demonstrator

A VO-compatible light-curve explorer

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Heidelberg IVOA Interop Meeting - 13 May 2013

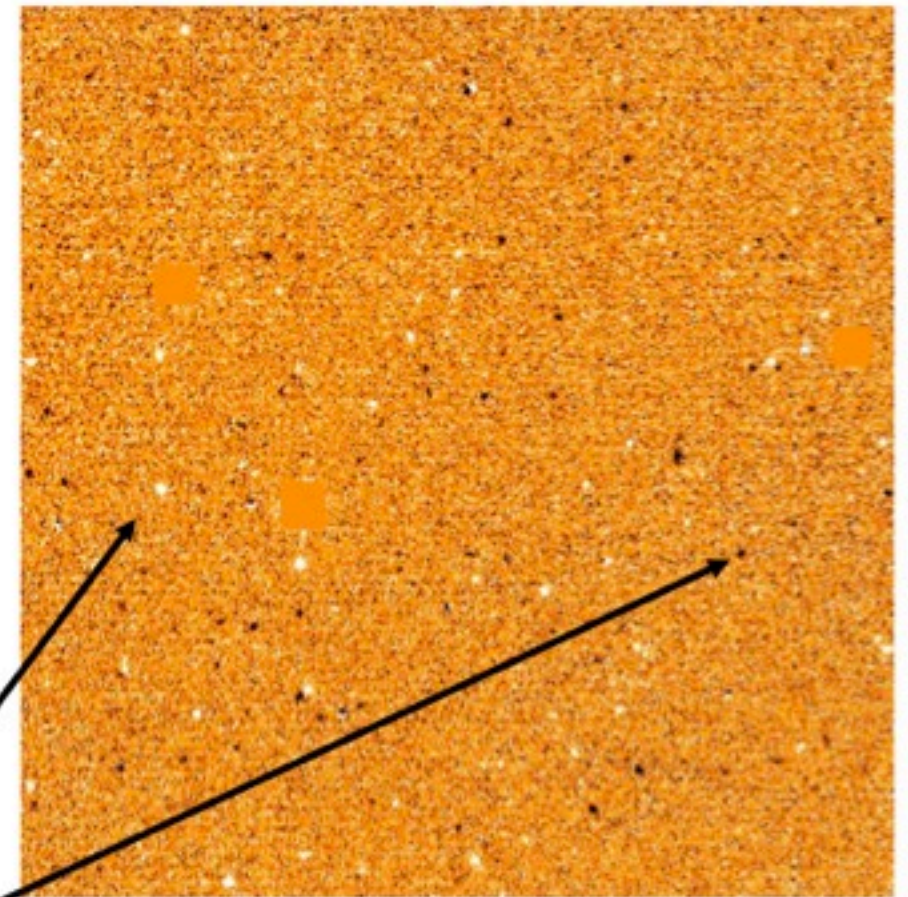# POMME - Pixel Observations of M31 with MEgacam

- 2 epochs:
  - 2004/08-10
  - 2005/08-10
- 2 fields Megacam@CFHT
- 3 filters: g',r',i'

- Median seeing: 0.7 arcsecs

- Science goals: time-domain !
  - Identify variables
  - Study cepheids and EBs
  - Improve distance determination
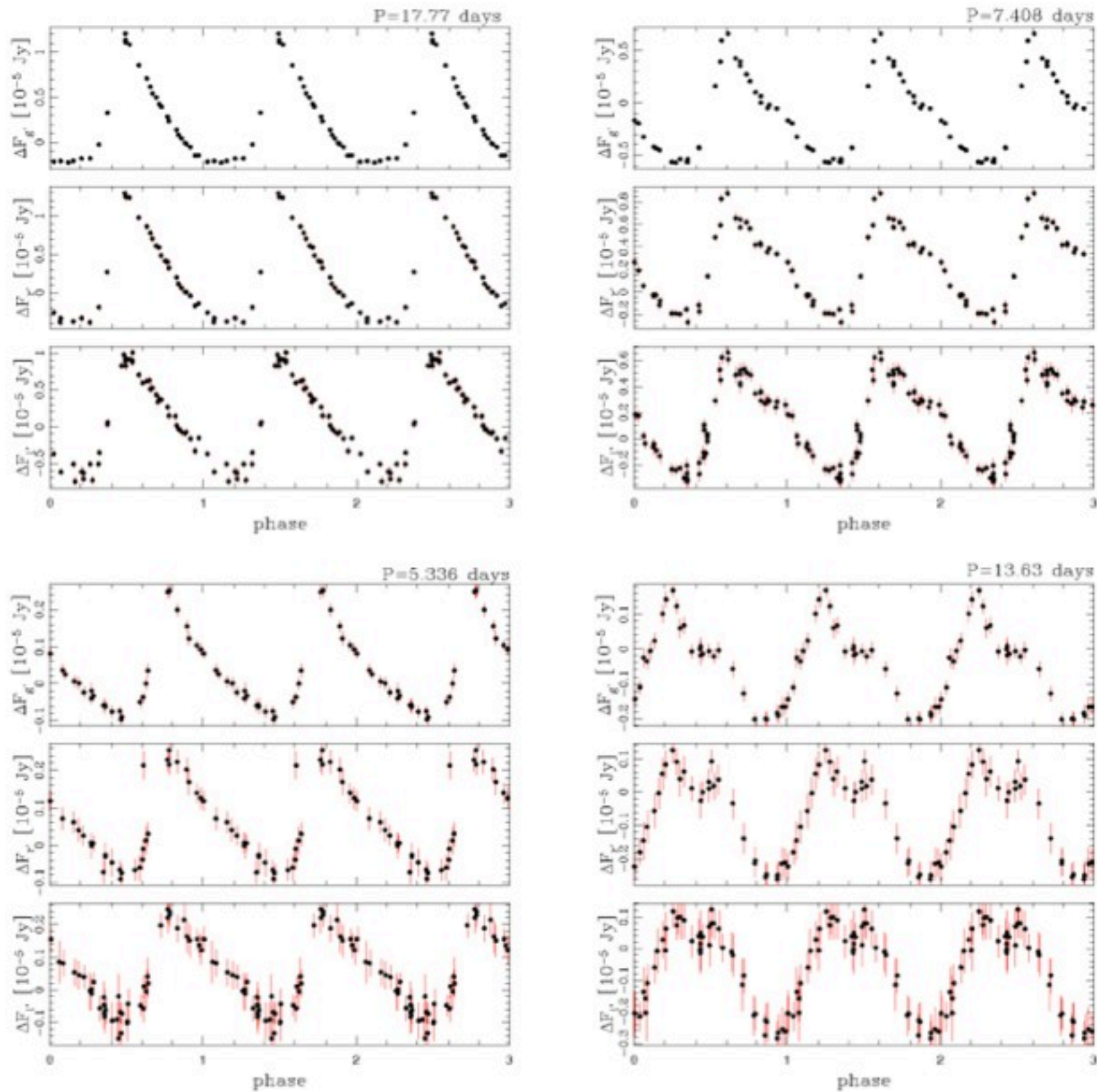
Difference Imaging

single frame

difference frame

− reference frame

variable point sources

POMME Light curves

POMME Database

- Main catalog: Positions and light-curves

variables

id	CHARACTER VARYING(12)
ra	CHARACTER VARYING(12)
de	CHARACTER VARYING(12)
period	DOUBLE PRECISION
num	INTEGER

63,174 rows

lightcurves

variable_id	CHARACTER VARYING(12)
band	CHARACTER(1)
mjd	DOUBLE PRECISION
dflux_a	DOUBLE PRECISION
dflux_psf	DOUBLE PRECISION
err_dflux_a	DOUBLE PRECISION
err_dflux_psf	DOUBLE PRECISION

8,287,978 rows

- Cross-matches: (examples: SIMBAD, VizieR)

x_2_simbad_variables_all

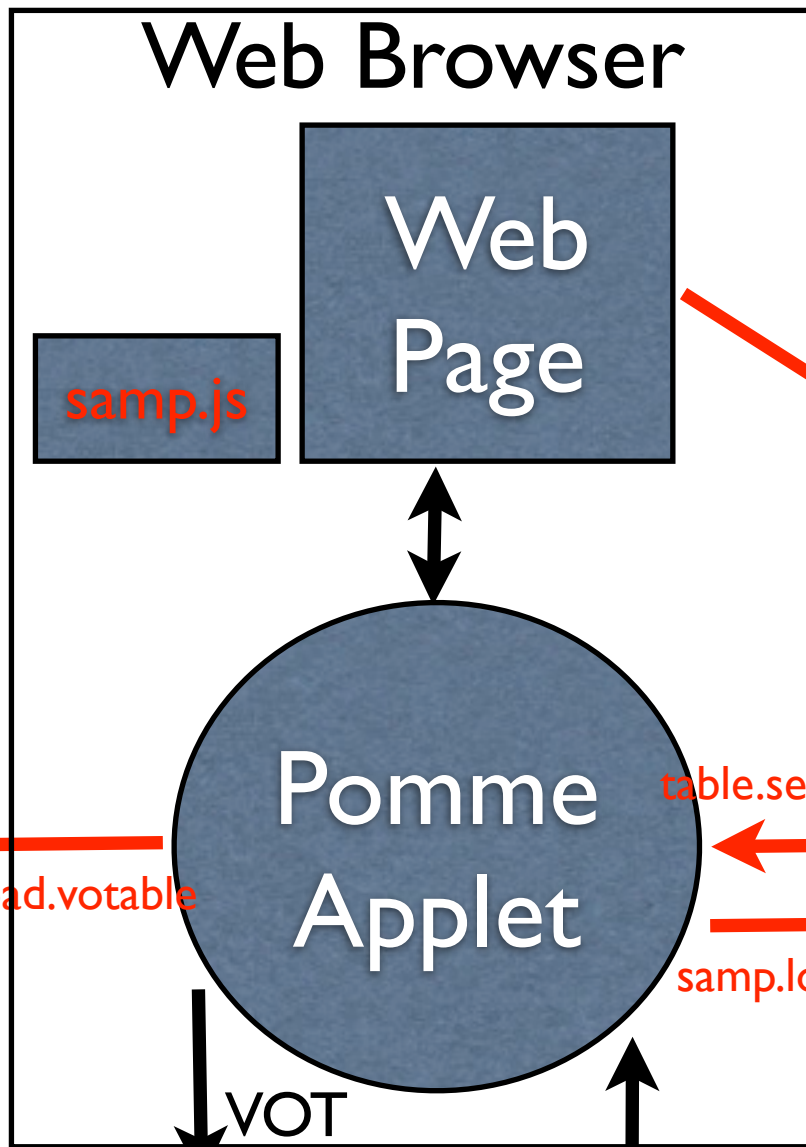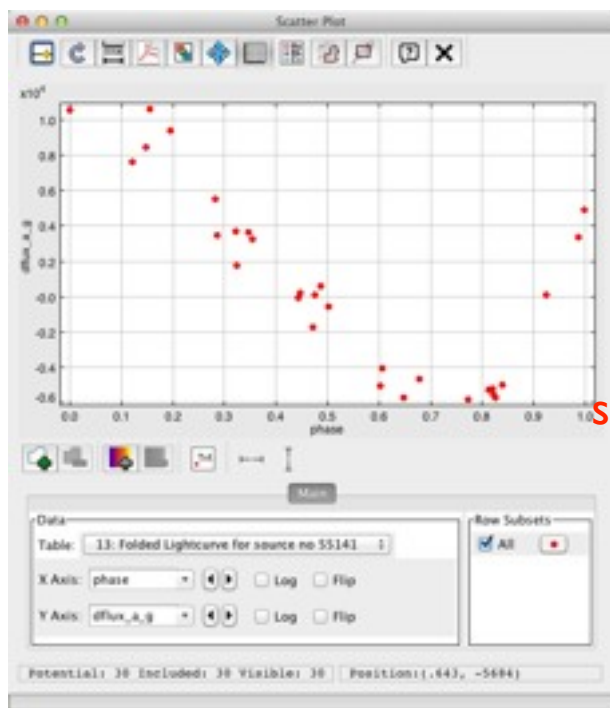| id_1	CHARACTER VARYING(11)
ra_1	CHARACTER VARYING(12)
de_1	CHARACTER VARYING(12)
period	REAL
ra_2	DOUBLE PRECISION
de_2	DOUBLE PRECISION
id_2	CHARACTER VARYING(32)
V__vartyp	CHARACTER VARYING(6)
V__LoVmax	CHARACTER(1)
V__Vmax	REAL
V__B_Vmax	CHARACTER(1)

x_2_j_a_a_459_321_table3

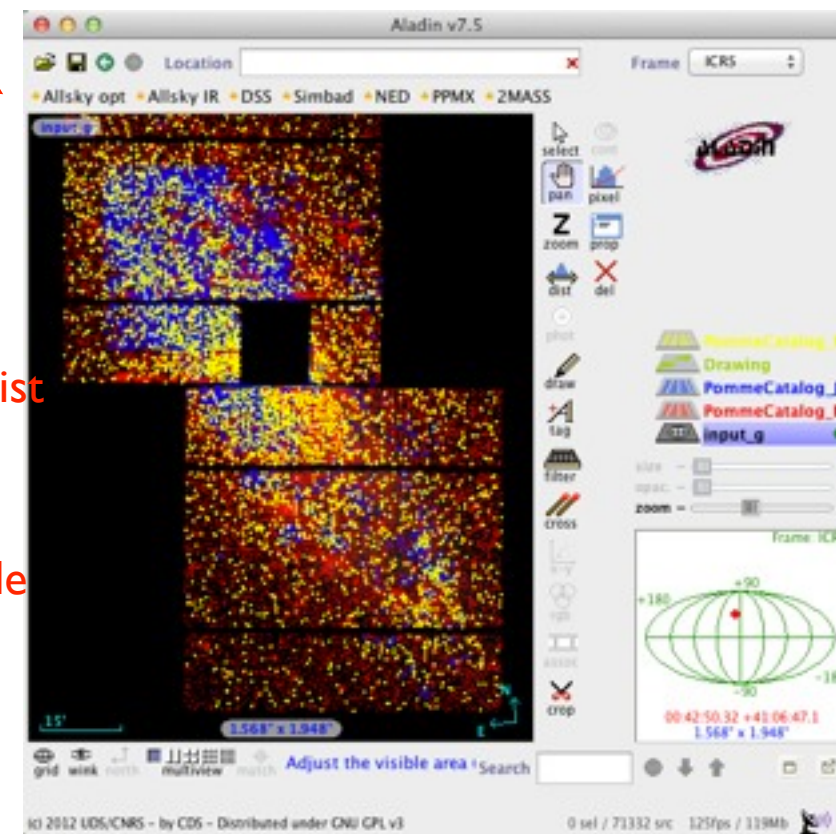| d_arcsec	DOUBLE PRECISION
_RAJ2000	DOUBLE PRECISION
_DEJ2000	DOUBLE PRECISION
Name	CHARACTER VARYING(22)
RAJ2000	DOUBLE PRECISION
DEJ2000	DOUBLE PRECISION
Vmag	REAL
e_Vmag	REAL
Bmag	REAL
e_Bmag	REAL

x_2_j_a_a

The POMME Demonstrator

- A small web app (PHP) - to become a portal

- Uses an invisible signed applet for on-demand VOT generation+processing

- Dependencies:

  - Aladin + TOPCAT for visualization

  - SAMP for app communication

  - Web Samp Profile for web integration

Architecture

Pomme Applet Requirements

- Invisible applet, driven by SAMP events

- Creates a catalog for Aladin from a (TAP) query

- Creates a light curve (LC) from a click on a source

- Data Processing: creates a **folded** LC

- => Speaks TAP (HttpUrlConnection)

- => Parse and generates VOTables (SAVOT)

Advantages

- On-demand, dynamic generation of light-curves

- Handled directly in the page by invisible applet

  - no need to go through another page nor generate VOTs beforehands

- Several sources can be selected and analysed

- The events received can be used to trigger more (Java or JavaScript) processing

  - eg: display an animated GIF of the thumnails of the selected object

Security

- The POMME project has adopted the VO early, but its data is still embargoed

- Therefore authentication had to be implemented:

  - The web page and applet requires HTTP basic authentication

  - The image data is protected similarly (Aladin compatible)

  - The TAP access is password-protected via DaCHS (TOPCAT and applet-compatible)

Demo

Perspectives

- Send scripts commands to Aladin (currently forbidden by x-samp.mostly-harmless=0)

- Send shape/color with catalog ? (or filters?)

- Authentication dialog in TOPCAT ?

- Load color healpix image in Aladin (currently needs a .glu file)

Acknowledgments

- Pierre Fernique and Thomas Boch (Aladin +Healpix generation)

- Mark Taylor (SAMP, TOPCAT)

- Markus Demleitner (DaCHS)

- Marc Wenger (SIMBAD queries)