

Hands-on with SDSS CasJobs database

Today

- Today we'll repeat the demo I showed in the opening lecture – query the photometry of stars in two areas of the sky, and plot their color-magnitude diagrams.
- We will
 - Log into SDSS CasJobs web portal
 - Query the positions and photometry for the two fields
 - Export the result as FITS files, download them
 - Load the output in an IPython notebook and visualize it
 - Do a search across the entire sky

The SQL query we'll run

The screenshot shows the SDSS Query / CasJobs web interface. The browser address bar displays `skyserver.sdss.org/casjobs/submitjob.aspx?resubmit=...`. The page header includes the SDSS logo and a SciServer banner that says "Coming soon!". The navigation menu contains links for Help, Tools, Query, History, MyDB, Import, Groups, Output, Schema Browser, Profile, Queues, SkyServer, and Logout.

Below the navigation menu, there are input fields for Context (set to DR12), Table (optional) (set to MyTable), and Task Name (set to My Query). There are also buttons for Samples, Recent, and Clear, and tabs for Syntax, Plan, and C.

The main area contains an SQL query editor with the following code:

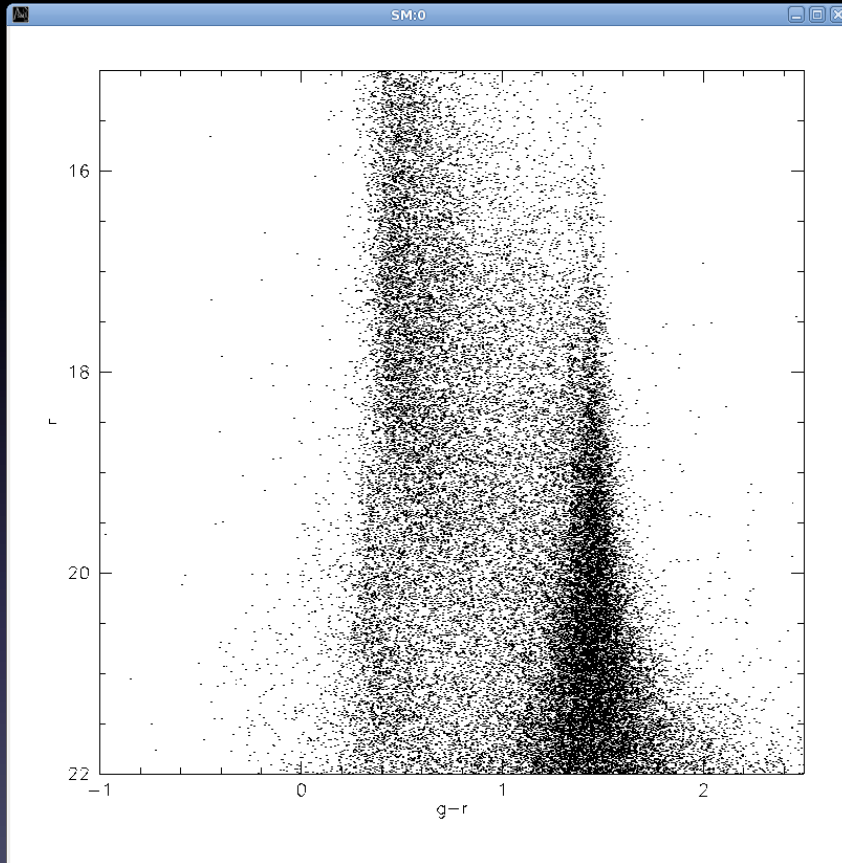
```
1 select
2   s.objid,
3   s.l, s.b,
4   s.extinction_r as Ar,
5   s.dered_g as g, s.dered_r as r,
6   s.err_g as gErr, s.err_r as gErr,
7   s.flags
8
9 from
10  Star s JOIN fGetNearbyObjEq(341.6, 31.7, 60) n on s.objId = n.objID
11
12 into
13  mydb.field1
```

Two annotations with arrows point to specific parts of the query:

- An arrow points to the `FROM` clause (`Star s JOIN fGetNearbyObjEq(341.6, 31.7, 60) n on s.objId = n.objID`) with the text: "FROM clause – this is how CasJobs handles spatial limits".
- An arrow points to the `INTO` clause (`mydb.field1`) with the text: "INTO clause – where to store the result. The results go to tables in your personal database ('mydb').".

At the bottom left, the text "Contact v4.0.3" is visible.

Basic Data Analysis: A Color-Magnitude Diagram (CMD)



```
Untitled - Notepad
File Edit Format View Help
data "field1.csv"
read <1 2 b 3 Ar 4 u 5 g 6 r 7 i 8 z 9>

set gr = g-r
lweight 2
expand 1.001
limits -1 2.5 22 15
ptype 0 0
erase
box
points gr r
xlabel g-r
ylabel r
```

CasJobs

http://casjobs.sdss.org/CasJobs/SubmitJob.aspx

SDSS Query / CasJobs

Help Tools Query History MyDB Import Groups Output Profile Queues SkyServer Logout mjuric

Context Table (optional) Task Name

DR7 MyTable My Query

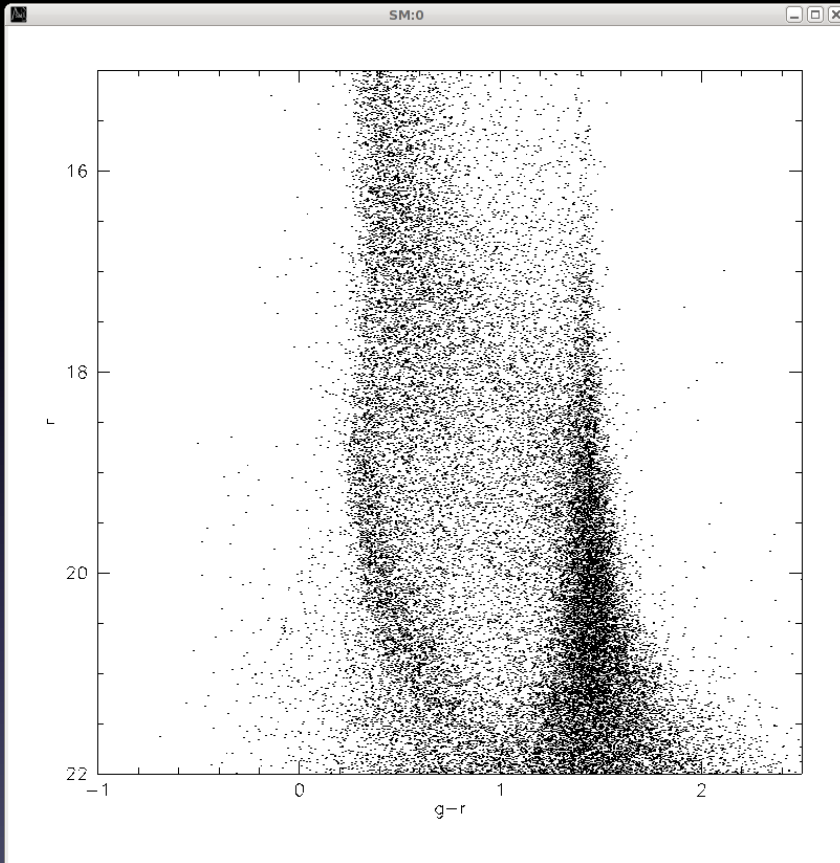
Samples Recent Clear Line 1, Col 1 Syntax Plan Quick Submit

Get the positions (in Galactic coordinates) and dereddened magnitudes of all stars within 1 degree of $\alpha = 341.6, \delta = 31.7$

$\alpha = 115.2, \delta = 32.7$

Contact
\$Name: v3_5_16 \$, \$Revision: 1.70 \$, Last modified: Wednesday, September 17, 2008 at 3:35:22 PM

Color-Magnitude Diagram

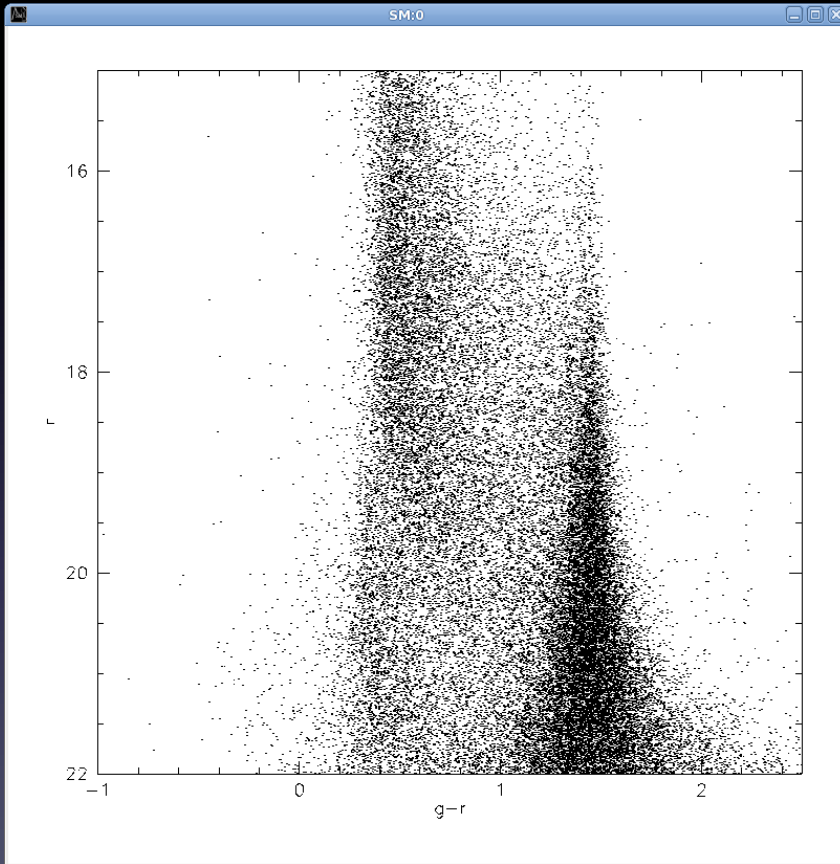


```
Untitled - Notepad
File Edit Format View Help
data "field2.csv"
read <1 2 b 3 Ar 4 u 5 g 6 r 7 i 8 z 9>

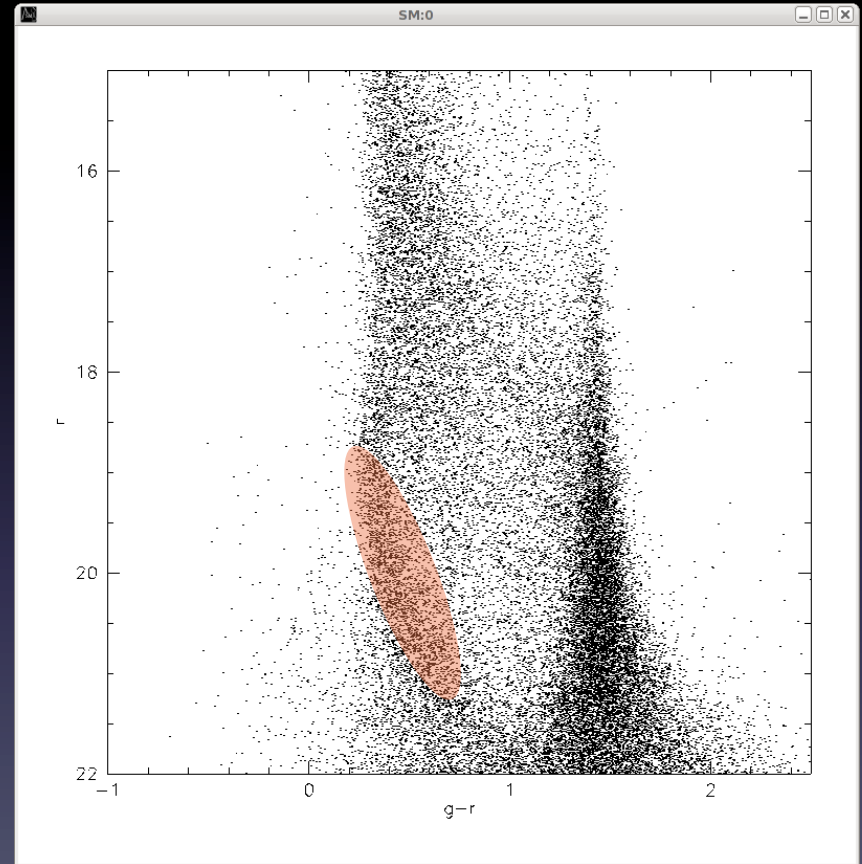
set gr = g-r
lweight 2
expand 1.001
limits -1 2.5 22 15
ptype 0 0
erase
box
points gr r
xlabel g-r
ylabel r
```

Notice Anything Different...?

Field #1

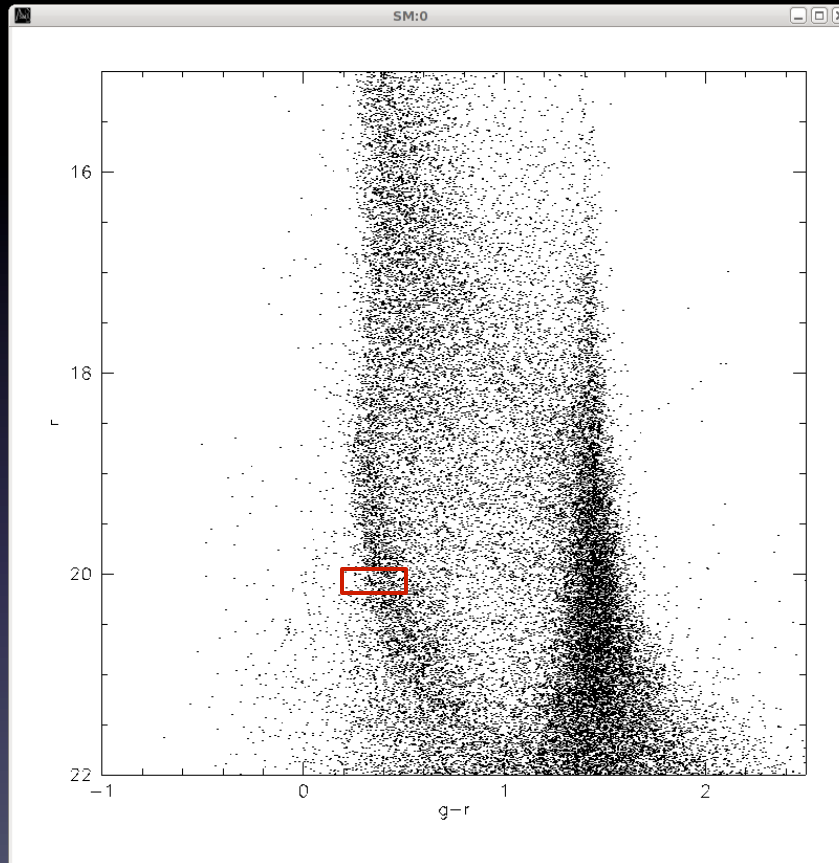


Field #2




Hmmm... How do I do this for the whole sky?

Monoceros stream CMD



CasJobs

[http://casjobs.sdss.org/CasJobs/jobdetails.aspx?id=4930248](#)


SDSS Query / CasJobs

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[mjuric](#)

'My Query' Details

[Resubmit Job](#)

JobID	TaskName	Context	Queue	Submitted	Started	Finished	Status
4930248	My Query	DR7	600	7/28/2010 8:04:02 AM	7/28/2010 8:04:10 AM	7/28/2010 8:09:21 AM	Finished

Executed on Rows

Message

DR7Best long 94144

Query Complete

Query

```

select
s.objid,
s.l, s.b,
s.ra, s.dec,
s.extinction_r as Ar,
s.dered_u as u, s.dered_g as g, s.dered_r as r, s.dered_i as i, s.dered_z as z,
s.err_u, s.err_g, s.err_r, s.err_i, s.err_z,
s.flags

from
  Star s

into
  mydb.northslice3

where
  b > 40
  and 0.2 < g - r and g - r < 0.4
  and 21 < r and r < 21.1
        
```

Contact

\$Name: v3_5_16 \$,\$Revision: 1.23 \$, Last modified: Wednesday, May 14, 2008 at 1:52:25 AM


CasJobs

Mario

skyserver.sdss.org/casjobs/submitjob.aspx?resubmit=...

☆

Apps★ BookmarksOpen in nbviewerYouTube - Armin VanIntroduction to Scr...» Other Bookmarks



SDSS Query / CasJobs

SciServer

Coming soon!

HelpToolsQueryHistoryMyDBImportGroupsOutputSchema BrowserProfileQueuesSkyServerLogout

Context

Table (optional)

Task Name

DR12

MyTable

My Query

Samples

Recent

Clear

Syntax

Plan

C

```
1 select
2   s.objid,
3   s.l, s.b,
4   s.extinction_r as Ar,
5   s.dered_g as g, s.dered_r as r,
6   s.err_g as gErr, s.err_r as gErr,
7   s.flags
8
9 from
10  Star s
11
12 where
13   b > 40
14   and 0.2 < g - r and g - r < 0.4
15   and 21 < r and r < 21.1
16
17 into
18  mydb.northfiltered
```

Contact

v4.0.3

Field of Streams

