

Bamberg AG Tagung Puzzler: Solutions

The Standard Solution (Aladin 10)

In 2017, with version 10, Aladin's user interface changed in several major respects. If you still have an old (i.e., before version 10) Aladin, see below.

1. Fire up Aladin, load the image (File/Load direct URL).
2. Zoom out until you can see the entire image.
3. In the side bar (if you can't see it, click File/Catalogs), type PPMXL into select.
4. Double click one of the PPMXL services (we, of course, recommend the one from org.gavo.dc:-); you should see the objects from the catalog now.
5. Using the select tool, draw a box matching the the footprint of the image.
6. In Aladin's foot line, you'll see something like 52 sel/xy src (where xy depends on how large your initial window was) – so, you've selected 52 objects, and that's your answer.

If you want to be precise and just use the WFPC footprint, you can do three rectangular selections; hold the shift key to make Aladin keep the previous selection. This would yield something like 43 objects.

The Standard Solution (pre-Aladin 10)

1. Fire up aladin, load the image (you can just paste the URL into the Location line).
2. Reading catalogs is a Cone Search thing, so fire up TOPCAT, too. Open the VO/cone search, and do a registry search for PPMXL. Both services should be fine.
3. Make sure "Accept Sky Positions" is selected in "Cone Parameters," and in Aladin click somewhere in the center of the image. Note the position is filled out.
4. Fill out the radius to roughly match the size of the image (Aladin shows the scale at the bottom of the image display; 5 arcmin are fine here)
5. Send off the cone search and then select Interop/Send table to/Aladin.
6. Back in Aladin with the select tool just draw a box around the image, and in the footer of the Aladin window you should see something like 53 sel/774 src. So, 53 is your answer (there's border cases, so we've been generous).
7. finally, in Aladin, click Tool/Simbad Pointer and move your mouse pointer to the center of the image. Simbad will tell you you're looking at the planetary nebula NGC 2346.

(incidentally, you could have used Aladin to perform the cone search, too, but TOPCAT's cone search interface is quite a bit better for this kind of thing).

The Nerd Solution

This is using TAP and ADQL for extra coolness; start Aladin as above.

1. We want to figure out the geometry of the image. For that, select "ICRSd" in Aladin's "Frame" dropdown, and for all four corners of the image, click on them and then cut'n'paste the corresponding positions from the location line into a text file.
2. Start TOPCAT as a TAP client; to find a TAP server that has PPMXL, in recent TOPCATs, in the TAP window you can check "description" in the registry search in the TAP window and the look for PPMXL. In older TOPCATs, just enter the access URL "http://dc.g-vo.org/tap" near the foot of the TAP window.
3. Now count the number of stars within the polygon defined by the edges you obtained:

```
select count(*) as number_stars
from ppmxl.main
where
  1=contains(point('icrs', raj2000, dej2000),
    polygon('icrs',
      107.34969,-00.83229, 107.37338,-00.80138,
      107.34323,-00.77844, 107.31972,-00.80949))
```

Again, the result is 53.