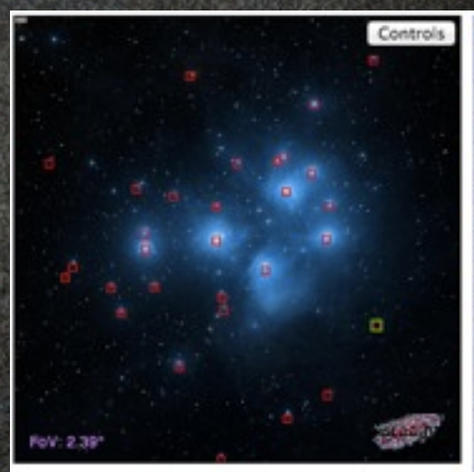
# Aladin Lite

***Thomas Boch*** *[CDS]*


| Full | r deg | RAJ2000 "h:m:s" | DEJ2000 "d:m:s" | HIP | n | Sn | So | RArad deg | DErad deg | Plx mas | e_ mas | pmRA mas/yr | pmDE mas/yr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.146460 | 03 46 19.574 | +23 56 54.08 | 17608 | | 5 | 0 | 056.58150148 | +23.94846199 | 8.58 | 0.37 | 21.13 | -43.65 |
| 2 | 0.162863 | 03 47 29.077 | +24 06 18.49 | 17702 | | 5 | 0 | 056.87110081 | +24.10524179 | 8.09 | 0.42 | 19.34 | -43.67 |
| 3 | 0.261504 | 03 47 20.969 | +23 48 12.05 | 17692 | | 5 | 0 | 056.83731961 | +23.80345385 | 8.90 | 0.77 | 18.56 | -44.31 |
| 4 | 0.292267 | 03 47 29.454 | +24 17 18.04 | 17704 | | 5 | 0 | 056.87267468 | +24.28845290 | 9.42 | 0.75 | 18.33 | -44.69 |
| 5 | 0.326977 | 03 47 17.142 | +23 43 36.30 | 17684 | | 5 | 0 | 056.82151786 | +23.72681305 | 15.52 | 0.73 | -34.94 | -25.54 |
| 6 | 0.402912 | 03 45 49.607 | +24 22 03.89 | 17573 | | 5 | 0 | 056.45663811 | +24.36785797 | 8.51 | 0.28 | 20.95 | -45.98 |
| 7 | 0.454001 | 03 44 52.537 | +24 06 48.01 | 17499 | | 5 | 0 | 056.21884818 | +24.11344840 | 8.06 | 0.25 | 20.84 | -46.06 |
| 8 | 0.484306 | 03 46 59.398 | +24 31 12.45 | 17664 | | 5 | 0 | 056.74743147 | +24.52023406 | 7.66 | 0.66 | 22.73 | -45.00 |
| 9 | 0.489225 | 03 48 30.095 | +24 20 43.89 | 17791 | | 5 | 0 | 057.12535040 | +24.34562943 | 7.87 | 1.32 | 17.68 | -43.28 |
| 10 | 0.515076 | 03 48 56.941 | +23 51 25.68 | 17832 | | 5 | 0 | 057.23713023 | +23.85727235 | 13.22 | 0.52 | 46.63 | -56.75 |
| 11 | 0.522632 | 03 46 02.900 | +24 31 40.43 | 17588 | | 5 | 0 | 056.51203202 | +24.52800593 | 8.58 | 0.56 | 19.88 | -44.37 |
| 12 | 0.527909 | 03 44 48.215 | +24 17 22.09 | 17489 | | 5 | 0 | 056.20084225 | +24.28957701 | 8.65 | 0.36 | 20.38 | -44.81 |
| 13 | 0.531295 | 03 49 09.743 | +24 03 12.30 | 17847 | | 75 | 4 | 057.29054699 | +24.05352413 | 8.53 | 0.39 | 17.70 | -44.18 |
| 14 | 0.545647 | 03 49 11.216 | +24 08 12.16 | 17851 | | 5 | 0 | 057.29668416 | +24.13682556 | 8.54 | 0.31 | 18.07 | -47.20 |
| 15 | 0.559003 | 03 45 54.477 | +24 33 16.24 | 17579 | | 5 | 0 | 056.47693310 | +24.55462133 | 8.77 | 0.54 | 20.18 | -44.87 |
| 16 | 0.568138 | 03 45 12.496 | +24 28 02.21 | 17531 | | 5 | 0 | 056.30200903 | +24.46737906 | 7.97 | 0.33 | 21.24 | -40.56 |
| 17 | 0.670830 | 03 49 21.749 | +24 22 51.43 | 17862 | | 5 | 0 | 057.34057535 | +24.38106398 | 8.18 | 0.59 | 17.42 | -45.38 |
| 18 | 0.706233 | 03 48 20.816 | +23 25 16.50 | 17776 | | 5 | 0 | 057.08668458 | +23.42136364 | 8.45 | 0.39 | 17.99 | -46.57 |
| 19 | 0.736218 | 03 49 43.531 | +23 42 42.68 | 17900 | | 5 | 0 | 057.43133303 | +23.71196321 | 8.72 | 0.60 | 16.73 | -44.82 |
| 20 | 0.739830 | 03 49 58.054 | +23 50 55.30 | 17923 | G | 15 | 3 | 057.49184621 | +23.84880345 | 6.81 | 0.72 | 16.81 | -44.88 |
| 21 | 0.816932 | 03 43 41.534 | +23 38 56.93 | 17401 | | 5 | 0 | 055.92300723 | +23.64925995 | 7.58 | 0.90 | 18.77 | -46.36 |

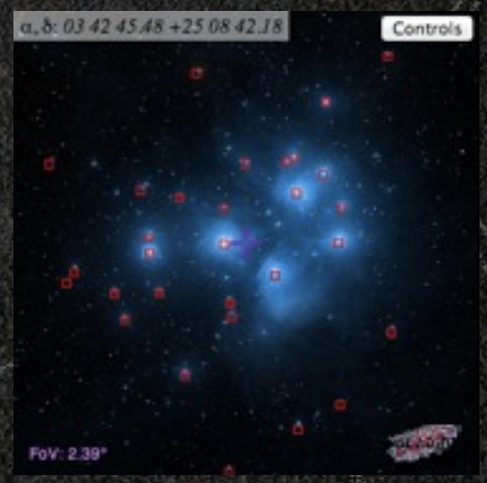
IVOA Interop Heidelberg, May 2013

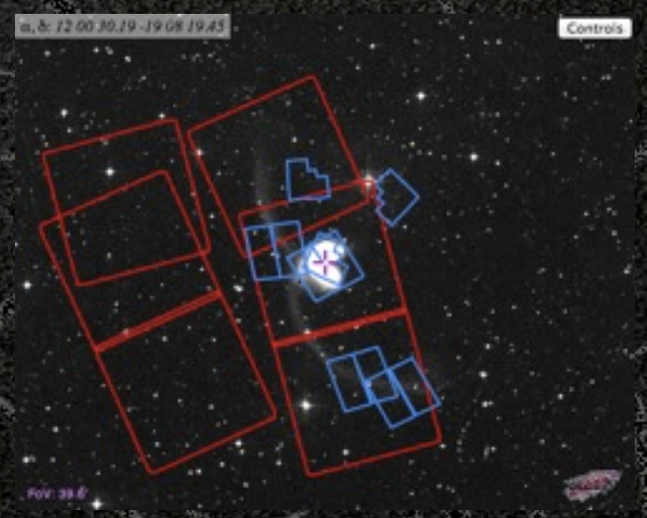
# Elevator pitch

- A lightweight sky atlas running in the browser
- Easily embeddable on a web page
- No plugin, no installation required (based on HTML5 canvas)
- Run on any device (desktops, tablets)

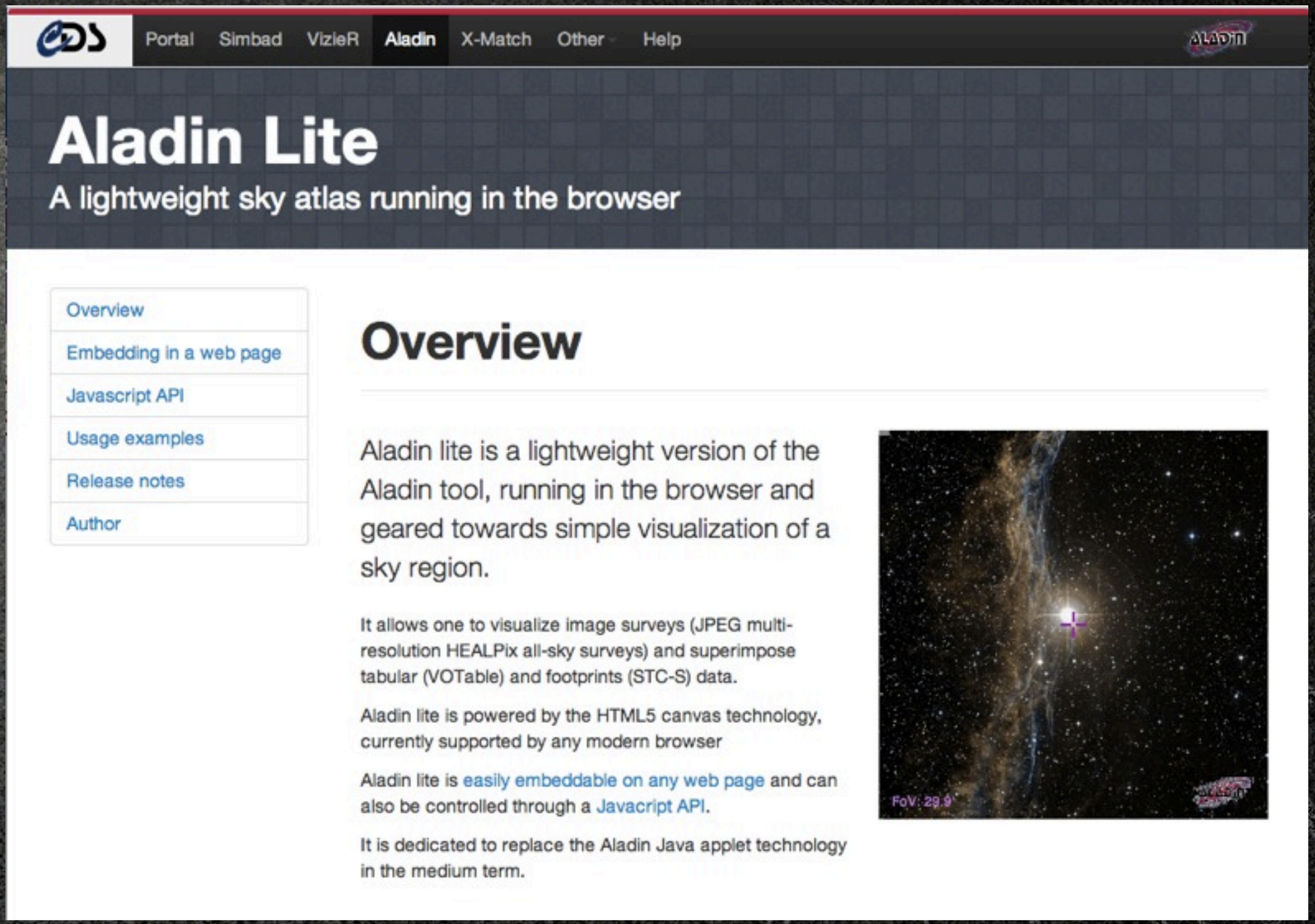
# Features

- Visualization of any region of the sky
  - available surveys include:
    DSS, 2MASS, SDSS, GALEX, IRAS, XMM-Newton, etc
    - multi-resolution, HEALPix-tesselated
  - with some interactivity : panning, zooming in and out
- Overlay some VOTables
- Overlay some STC-S footprints
- Lightweight: 72 kBytes +90 kB jQuery
  (25kB+32 kB if gzipped)
- Will replace the Aladin applet
  in the medium term

# Demonstration



# Aladin Lite API

- API to control Aladin Lite
  - allows one to develop advanced interactions between a web page and Aladin Lite
- Available methods:
  - setImageSurvey: set the background image survey
  - setZoom: set the zoom level
  - gotoPosition/gotoObject: point to the given location/object
  - createCatalogFromVOTable/addCatalog: parse a VOTable and add it to the current view
  - createFootprintFromSTCS/addOverlay: parse and visualize a STC-S footprint

# Some canvas performance tricks

- use requestAnimationFrame for animations, not setTimeout or setInterval (see http://paulirish.com/2011/requestanimationframe-for-smart-animating/)
- minimize state changes, minimize strokes
- cache frequently-drawn paths as images
- use stacked canvases for multiple layers
  - avoid unnecessary redraws

# Limitations

- HEALPix javascript library is currently limited to NSIDE=8192
  - Javascript integer limitation: Math.pow(2, 53)==Math.pow(2, 53)+1
- Canvas performances
  - different performances across browsers/machines
    - random freezes or crashes on some configurations :-(
      - difficult to reproduce/debug
- Graphical overlays (sources, footprints) stored in memory
- VOTable parsing done client-side, but we need a proxy because of cross-domain limitations
  ⟶ should IVOA encourage usage of CORS
  (Cross Origin Resource Sharing: http://www.w3.org/TR/cors/) ?

# Conclusion

- First version available at http://aladin.u-strasbg.fr/AladinLite/
- Room for improvement: feedback and suggestions welcome
- Next steps:
  - Refine and extend API (enable objects/footprints selection)
  - Improve handling of touch devices
  - Improve overall performances
  - Integrate Web SAMP
  - Investigate usage of HTML5 local storage