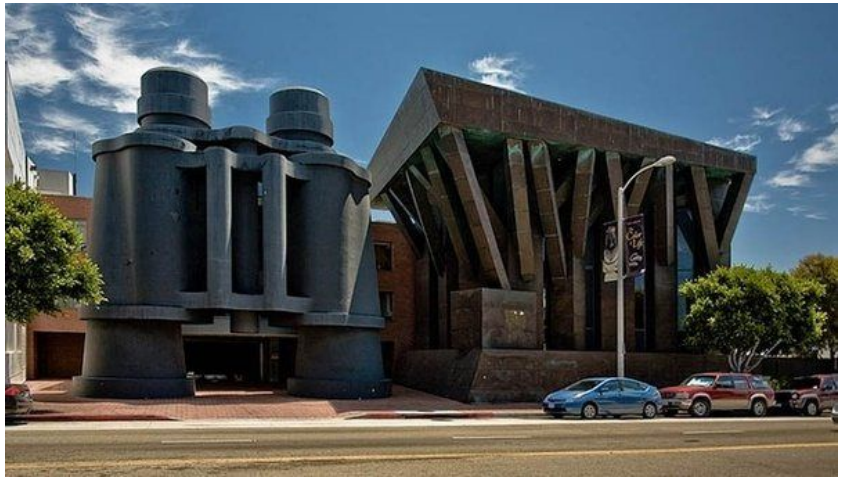
Astro to Industry

Because it’s easier than being an assistant professor.

Jake Hartman, Google
jakehartman@gmail.com
May 10, 2018

Also, the software industry is awesome these days.



OK, I am totally here to advertise Google.

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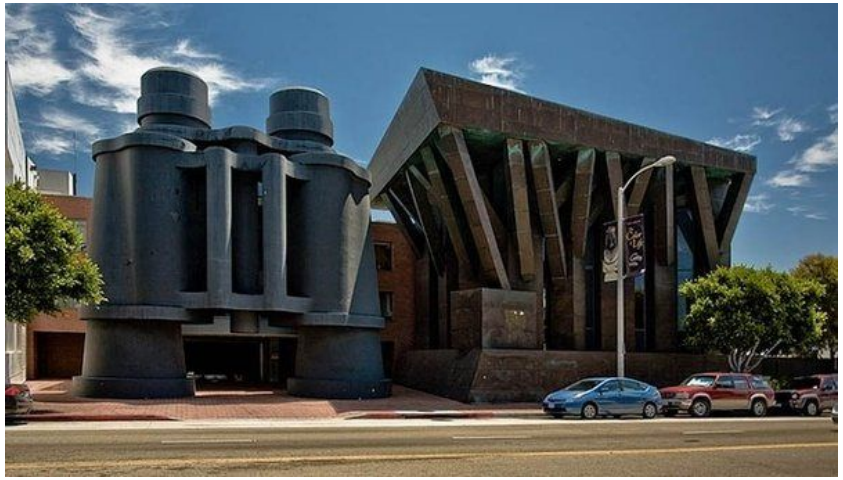

What I’m going to talk about

Right now:

- A bit about my journey from academia to tech
- Differences between academic and industrial software engineering
- Working at Google
- Go big or go startup? Some thoughts on company size
- Getting the job: the tech interview

In my activity session:

- More on the tech interview, with some sample questions

My journey from academia to tech

- MIT Physics PhD, 2007
  Thesis: “X-Ray Timing of the Accreting Millisecond Pulsar SAX J1808.4−3658”
- Postdoc: Naval Research Lab
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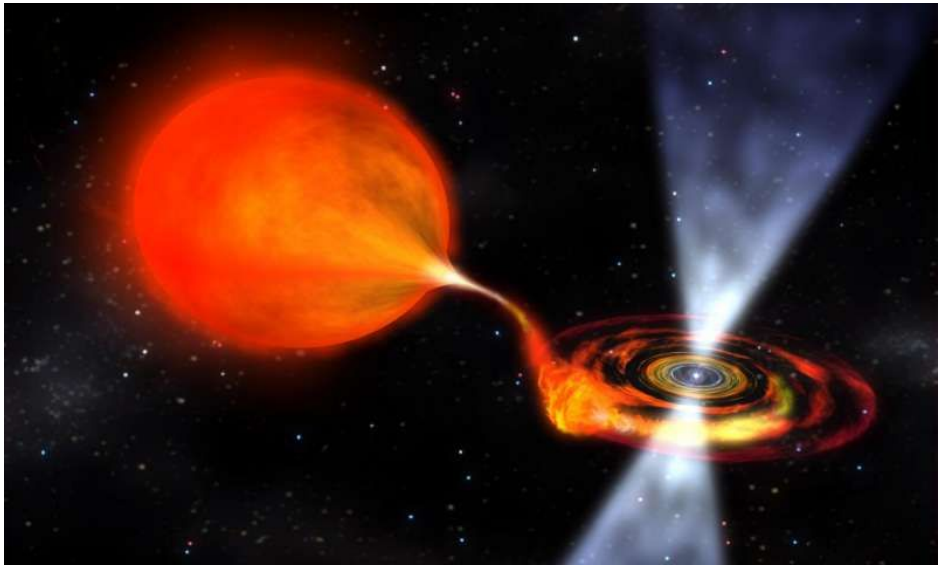
  Joined Feb 2014
  Worked in Display Ads for two years
  Switched to Google Drive



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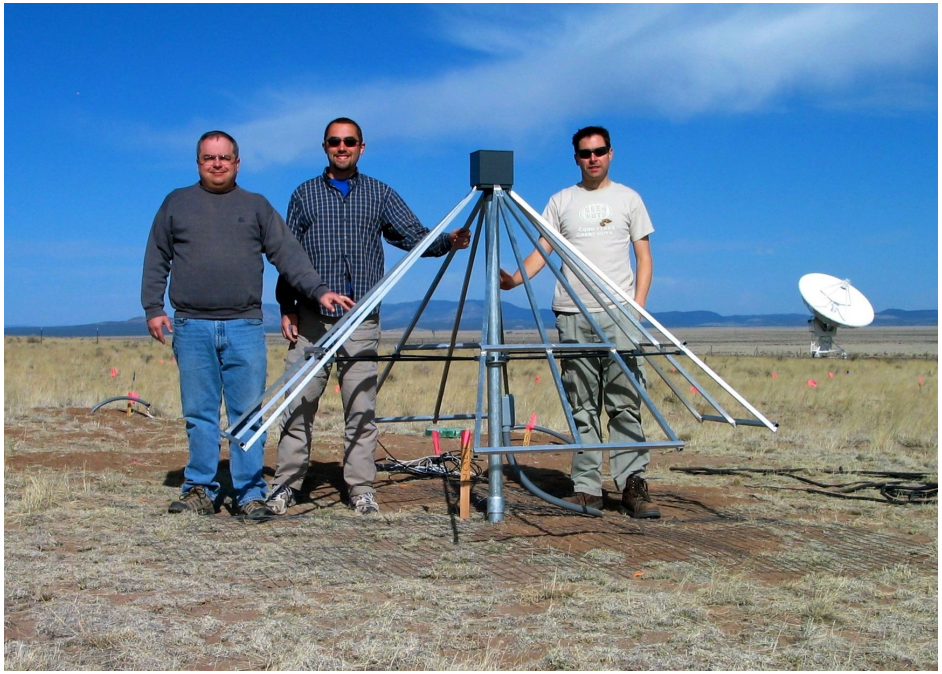

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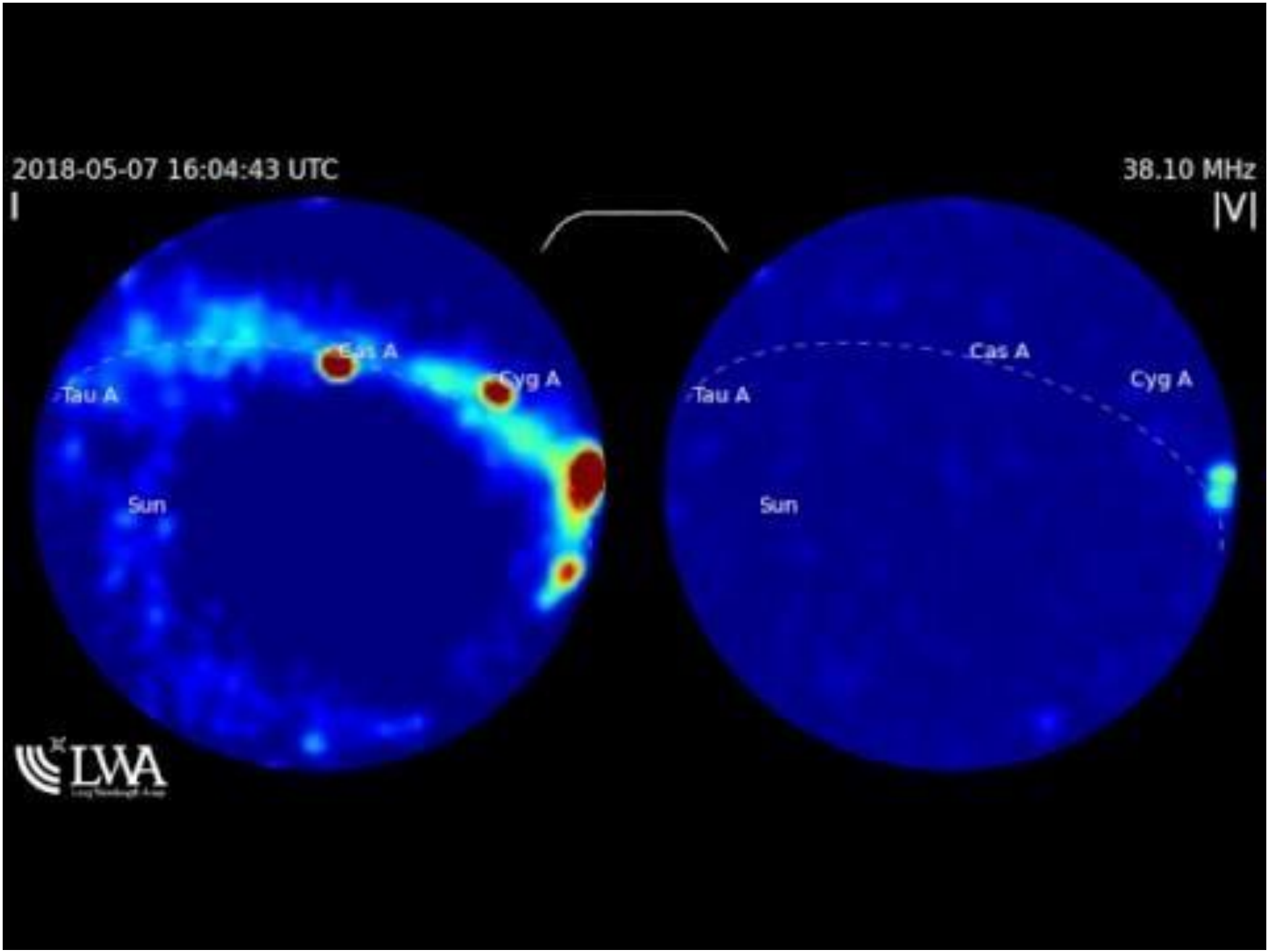
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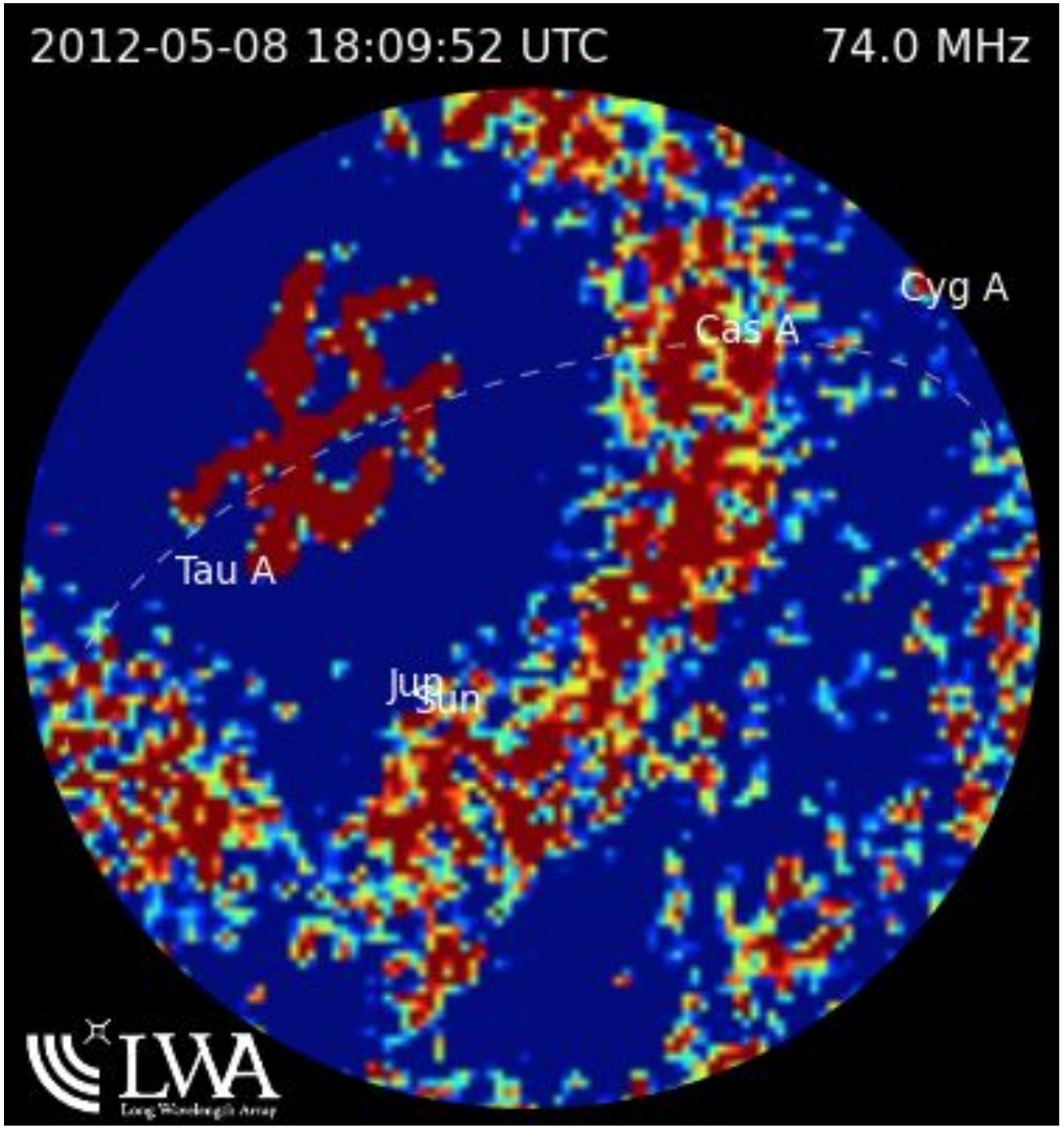
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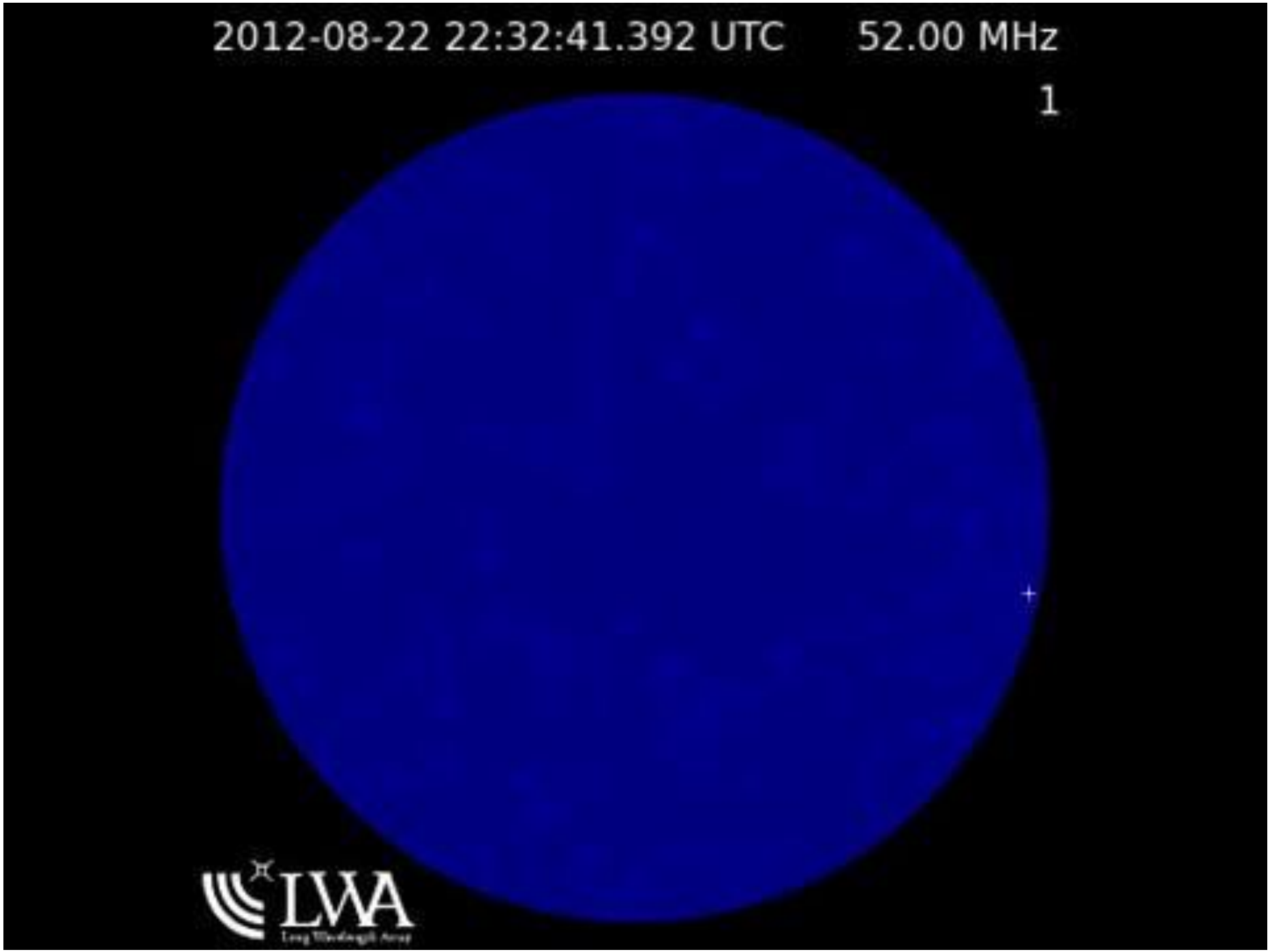
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Google
Display Network

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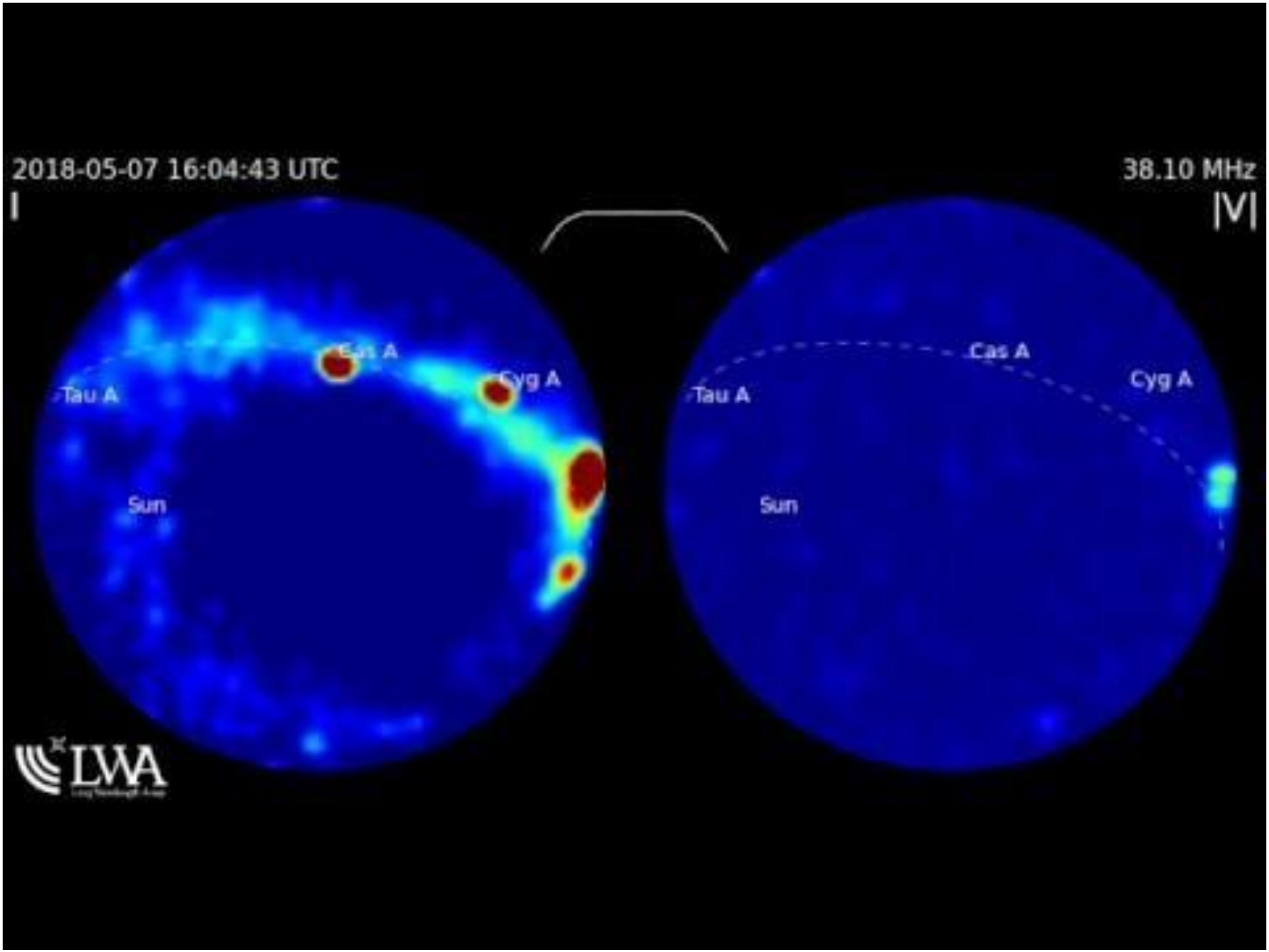
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Software engineering in academia vs. industry

- Unit testing
- Coding standards
- Peer review
- More collaboration
- Less throw-away code
- Credit (though not publicly)
- Awesome coding tools

Working at Google: the perks

- Academic environment
  - Diversity of work topics and interests
  - Training and classes
  - Frequent talks from visitors
- 20% projects
  - Google for Nonprofits
  - SPARK
  - Data investigations
- Option to change teams
- Reasonably flexible hours —
  and probably fewer of them per week
- Office perks: free food, game room, etc.
- The paycheck

Working at Google: the downside

- Learning curve / imposter syndrome
- Somewhat less self-determination and independence
- Depending on your role, you may feel like a “cog”
- Less flexible schedule than academia
- Fewer opportunities to travel
- Fewer opportunities to teach and give talks

What about a small company or startup?

- Impact, impact, impact
- Less support, for better or for worse
- More risk: salary vs. equity
- Far longer hours and more stress
- Stronger sense of team

- Or start your own company?

Getting the job

- Astrophysics Source Code Library, Github, etc.
- LinkedIn / networking — do this *actively*
- Career fairs — go early, go often, go prepared!
- Interested in Google? Let me know.

→ The tech interview

Getting the job

Cold contact request:

“Hi, I'm an astronomer leaving academia and looking to get into *[data science, software engineering, etc.]*. I'm really interested in a job in *[whatever area you're after]*, and the projects you’re working on at *[name of company]* sound interesting. I was wondering if I could take 15 minutes of your time to ask some questions about your day to day work. Thanks!”

If they respond, in your follow-up message you can ask if there are other engineers in their field that they would recommend talking with.

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Getting the job: surviving the tech interview

How it works at Google:

- Phone interview
- Visit campus for five one-on-one interviews, 45 min each

What is tested?

- Algorithms and data structures
- General coding ability: use a language you know well!
- Edge conditions and error handling
- Writing tests
- Communication
- Advanced topics: concurrency, mapreduce
- Whatever kind of computing the company does

Project: deeper dive on tech interview & coding

- Practice solving some trial interview questions
  (Note: all are available on Glassdoor.com or elsewhere!)
- A bit more on industry vs. academic coding