The Debian Astro project

A Debian Pure Blend for astronomy and astrophysics

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Debian GNU/Linux

- Free Linux based operating system
- One of the oldest distributions (founded 1993)
- **Free** as in "Free Speech"
- $> 51,000$ software packages
- $> 1,000$ official developers
- Social Contract; Debian Free Software Guidelines
- Base for many derivatives: Ubuntu, Mint, ...
- Current stable version: Debian 9 "Stretch", since June 2017
- Next version: Debian 10 "Buster"

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Debian Pure Blends

- Debian: General-purpose distribution
- Problem: soo many packages
- Structure by topic
- propagate usage of Debian in a specific field
- build a complete working environment
- *Blended tea*: a combination of different kinds of teas to guarantee consistent quality (Wikipedia)

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Debian Pure Blends

- Rationale: Experts in the field need help in packaging
- Upstream gets feedback from software integration
- Upstream developers even may become Debian maintainers
- tie a solid network of Debian developers, upstream, and users

Debian Pure Blends

- **Debian Astro** - Astronomy and astrophysics
- **Debian GIS** - Geographical Information Systems
- **DebiChem** - Chemistry
- **Debian Med** - Strong focus on Microbiology
- **NeuroDebian** - Neuroscience
- **Debian Science** - "Umbrella" blend for sciences
- **Debian Edu** - Education of all kind
- Debian Games, Debian Junior, Debian Multimedia, Hamradio, ...

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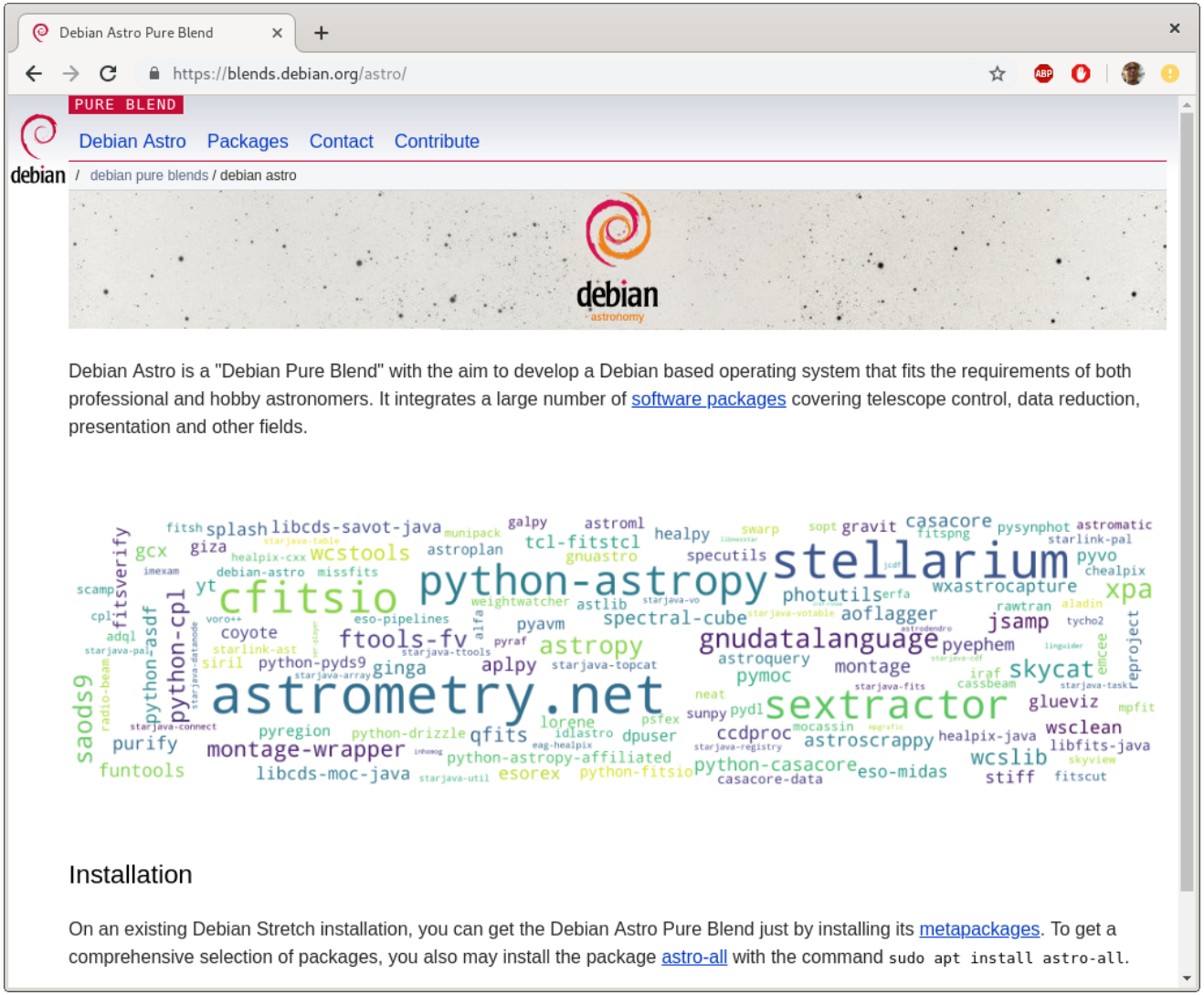
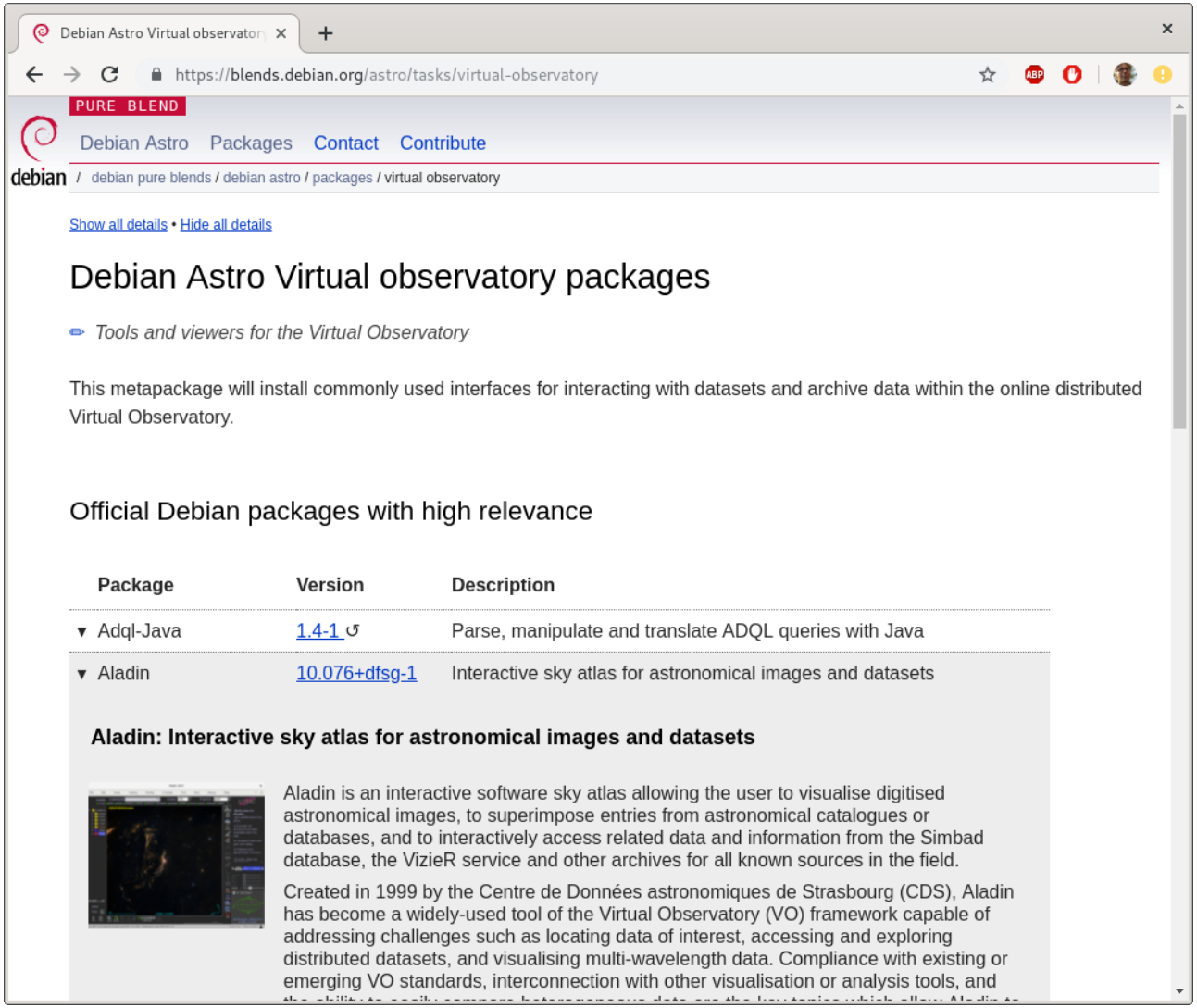
The Debian Astro Pure Blend

- currently 325 packages (more in preparation)
- 19 metapackages
- Web page, “tasks” pages
- Handle citations, entries in the Astronomical Software Code Library
- First release with Debian Stretch (June 2017)

Debian Astro Web Pages



Debian Astro Web pages



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Debian Astro Pure Blend Contents

- Base libraries
  - cfitsio, wcslib, cpl, starlink, casacore
- Python
  - Astropy, affiliated packages
- "Legacy"
  - IRAF, PyRAF
  - ESO-MIDAS
  - Tcl/Tk (DS9, fv, skycat)
  - GDL (IDL replacement)
- Java/Virtual Observatory
  - Aladin, Topcat, ADQL
- Radio Astronomy
  - cassbeam, wsclean, aoflagger
- much more (education, publication, amateurs, ...)

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The Debian Astro Team

- Mailing list: 170 subscribers
- Team members
  - total: 32
  - uploaders: 17
- Team maintained source packages: 179
- Git repositories in a central space (salsa.debian.org)
- Most packages have only one maintainer
- Some package not maintained by the Debian Astro team
  - educational
  - publishing
  - general physics, data analysis etc.

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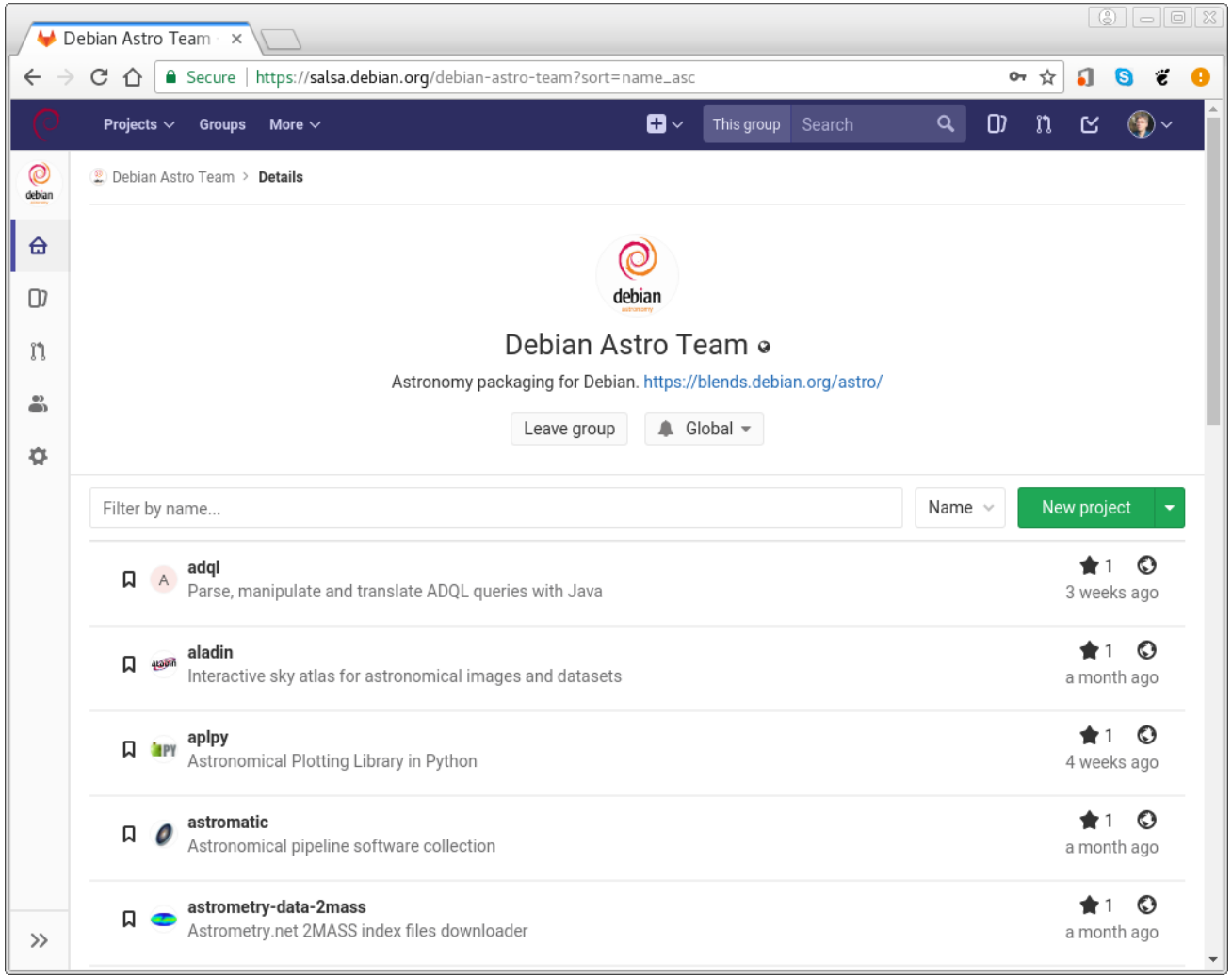
Debian Astro Development Server



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Advantages for Packaging: Technical

- simple installation for the users
- Testing:
  - install tests on 23 platforms (10 official, 13 inofficial)
  - regular integration tests (on each depedency change)
  - repeated “inofficial” install tests (Reproducible builds)
  - people doing research with software metrics
  - bug tracker is already there
- Coupled to distribution development
- Dependencies are recognized
  - automated “transitions” (recompilations) when ABI breaks
  - prevent from silent removal of dependencies
- Automatic migration to Ubuntu

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Advantages for Packaging: Social

- Connecting with the astronomical software community
- Self-magnification: a strong Debian Astro Pure Blend will attract more people to contribute
- Others may contribute to the package: bugfixes etc.
- Debian is "bazaar" style: everyone can follow, everyone can contribute, development is transparent
- Packages may get some attention even if "orphaned"
  - Team uploads
  - Non-maintainer uploads (NMU)
  - QA team
  - package adoption
- Coordinate / Avoid duplication of development efforts

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Debian as a Reference Platform

- Almost standard linux
- High quality standards
- Clear, consistent structure: comprehensive Debian policy, specific policies for different fields: Python, Java, Tcl/Tk, Science
- Lots of tools for packaging + package checks
- Patches from Debian often migrate upstream or “side stream” (to Macports, Fedora, ...)

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Older Debian releases

- Stable version: package versions fixed after distribution release
  - currently Debian 9, “Stretch”
  - updates: Only bug fixes, no new versions
- Backports
  - new versions
  - no automated backporting, need to be maintained
- Ubuntu: similar, but needs extra approval
- No specific workflow in Debian Astro yet
  - may be adopted from NeuroDebian
  - first steps recently with Astropy

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Packaging Rules, “Policy”

- Social Contract + Debian Free Software Guidelines: strict rules
- Debian policy
  - completely build from source
  - no convenience copies of code; re-use existing libraries
  - recursive packaging (package dependencies first, ...)
  - file system standard
  - package names, ...
- Specific policies (Python, Java, Tcl/Tk, Science)
- Portability (10 official architectures)
  - 32 vs. 64 bit
  - byte order
- Team maintenance

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Pointers

- Policy: `https://www.debian.org/doc/debian-policy`
- Developers Reference:
  `https://www.debian.org/doc/manuals/developers-reference`
- Web page: `https://blends.debian.org/astro`
- Mailing lists:
  - Astro: `https://lists.debian.org/debian-astro`
  - Python: `https://lists.debian.org/debian-mentors`
  - Mentors: `https://lists.debian.org/debian-mentors`
  - Common development: `https://lists.debian.org/debian-devel`
- Salsa project; Git repositories:
  `https://salsa.debian.org/debian-astro-team`
- IRC: `irc://irc.debian.org/debian-astro`

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Thank you

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