The Debian Astro project

A Debian Pure Blend for astronomy and astrophysics

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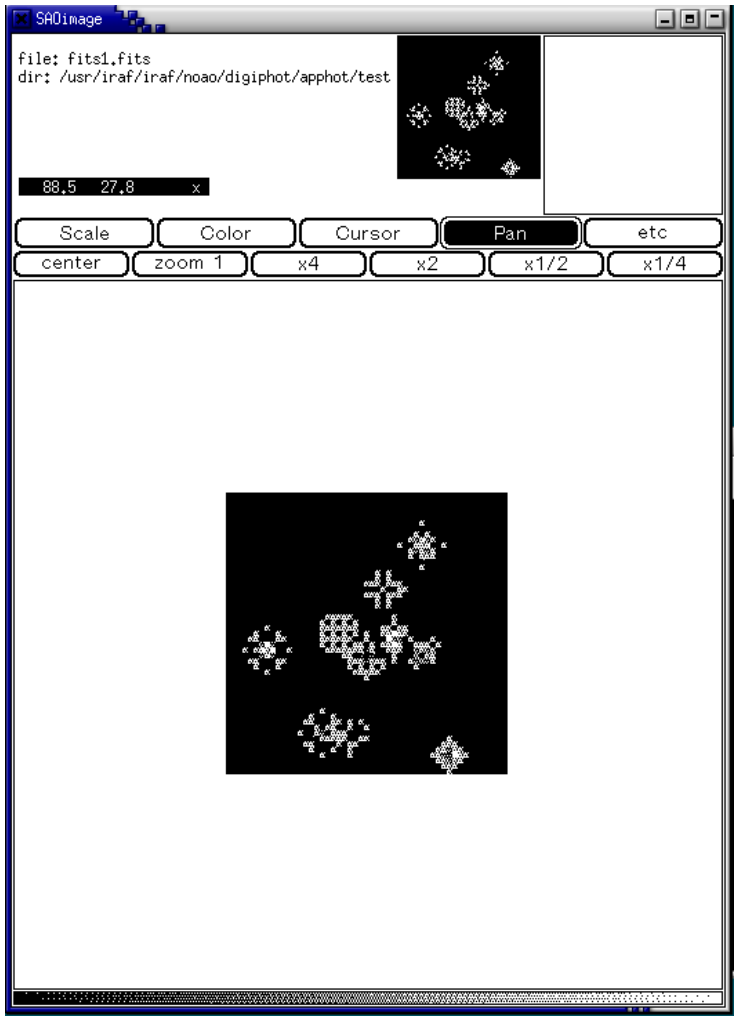
History of Debian Astro



- First packages: saoimage (1999), cfitsio (2000), iraf (2000), sextractor (2002), pyfits (2006)
- After 2006, many packages got unmaintained; bitrot, partial removal
- 2014 start with mailing list and alioth project
- 2016 official announcement of the Debian Astro Pure Blend
- Logo created by Maria Hammerstrom

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The Debian Astro Pure Blend

- *Blended tea*: a combination of different kinds of teas to guarantee consistent quality (Wikipedia)
- Method to organize Debian astronomy packages
  - currently 227 packages, (29 more in preparation)
  - 17 metapackages
  - Web page, "tasks" pages
  - Handle citations, ASCL entries
- Completely integrated into Debian (*Pure*)
- Goal: release the Blend with Debian Stretch (estimated 2017)
  - integrated in standard installer
  - special Debian Astro installation images
  - Life system (CD/USB, virtual machines)

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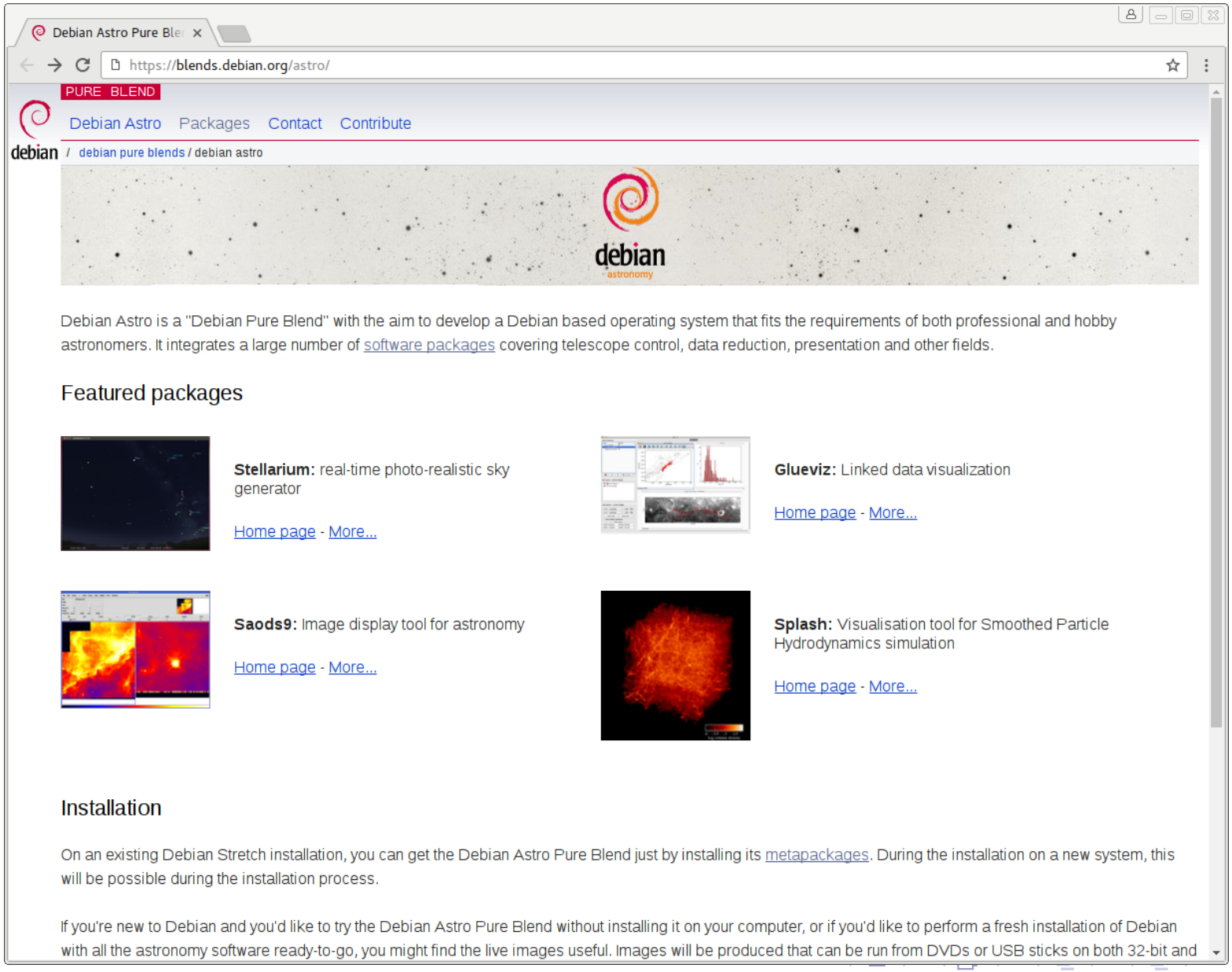
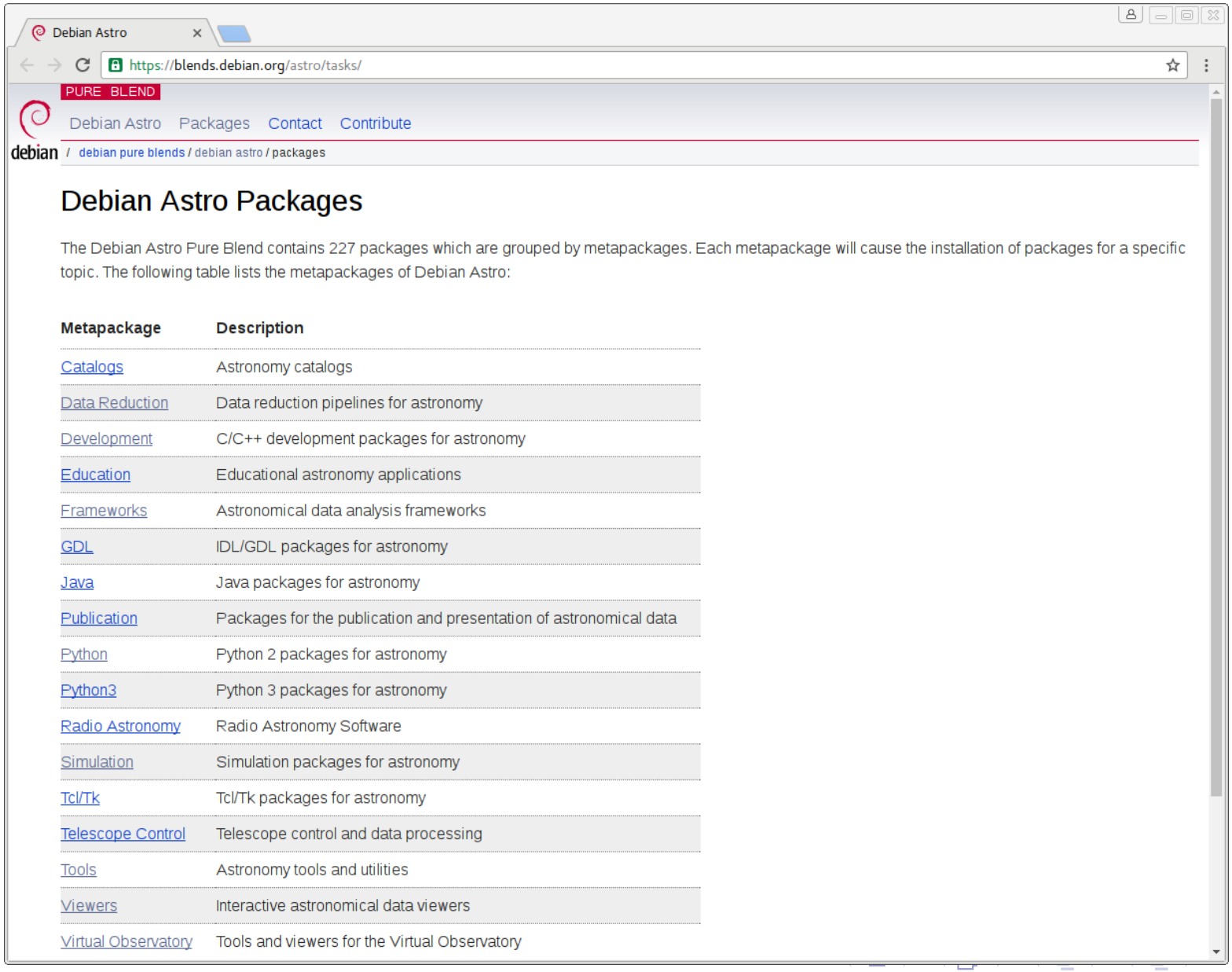
Debian Astro Web Pages



Debian Astro Web Pages



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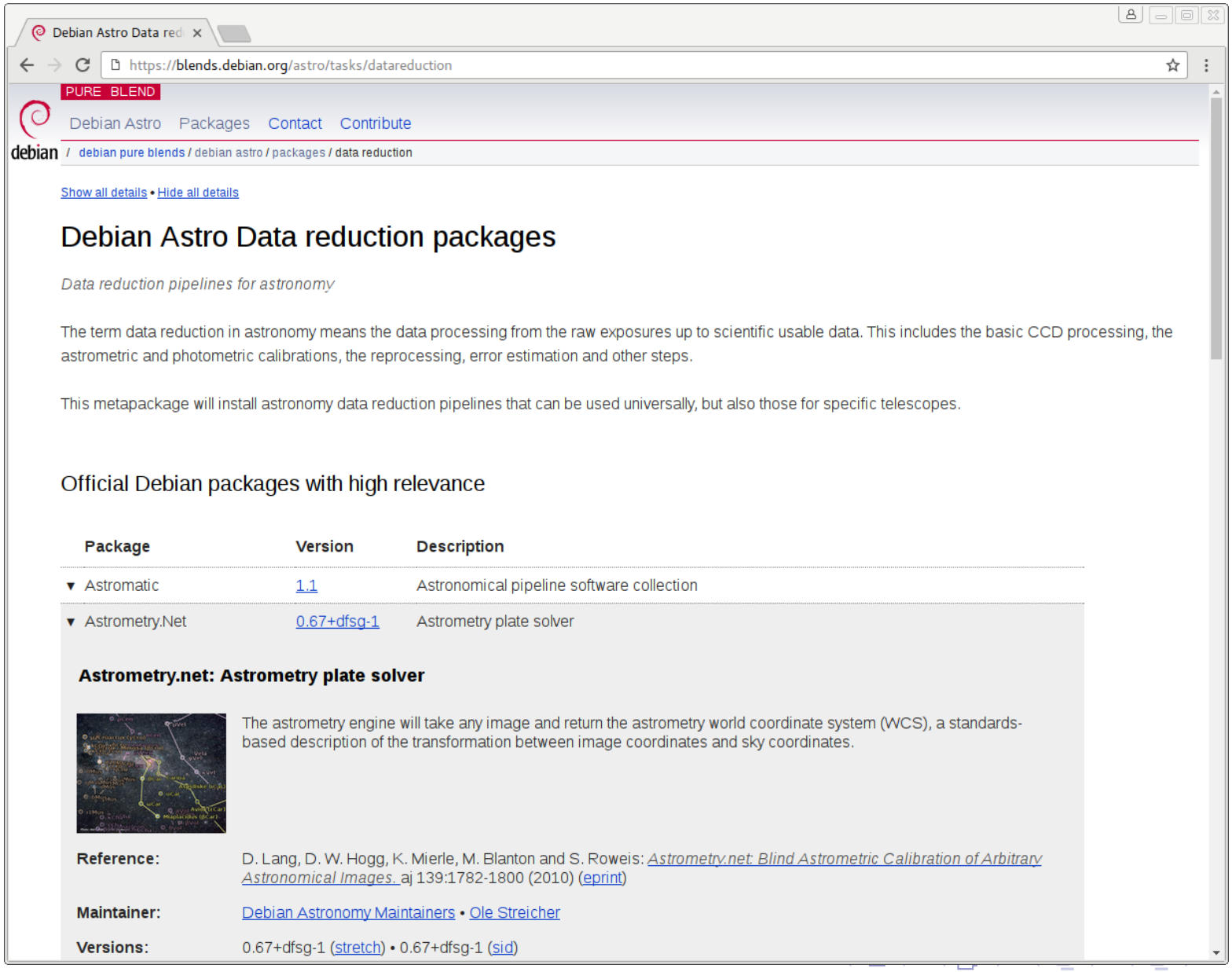
Debian Astro Web pages



Debian Astro Pure Blend Base libraries

- cfitsio, ccfits, qfits
- wcslib
- wcstools
- ESO cpl
- Starlink AST, PAL
- healpix (C, C++,Python)
- SOFA, PGPLOT (non-free)
- selected common science packages: fft, cminpack etc.

Debian Astro Pure Blend Contents

- Python 2/3
  - Astropy
  - affiliated packages
- "Legacy"
  - ESO-MIDAS
  - Tcl/Tk (DS9, fv, skycat)
  - GDL (IDL replacement)
  - no IRAF
- Java/Virtual Observatory
  - Aladin (in preparation)
- Radio Astronomy
  - casacore, python-casacore
- much more (education, publication, amateurs, ...)

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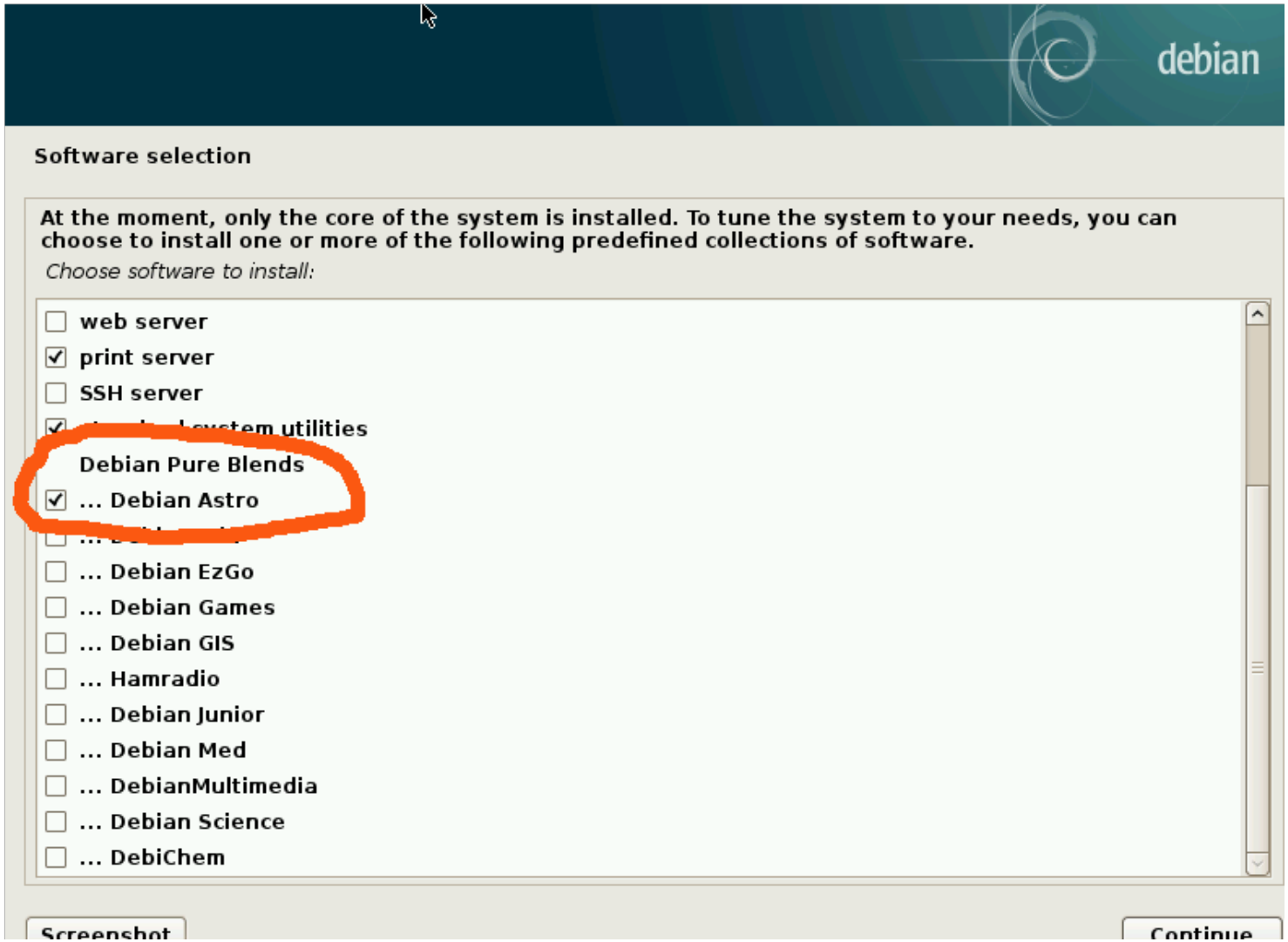
Debian Astro Installation



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The Debian Astro Team

- Mailing list: 140 subscribers
- Team members
  - total: 32
  - uploaders: 13
- Team maintained source packages: 101
  - mainly git repositories
  - some SVN
- Most packages have only one maintainer
- 1-day sprint last year at Debconf
- Some package not maintained by the Debian Astro team
  - educational
  - cfitsio ...

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Advantages for Public Packaging: Technical

- Testing:
  - install tests on 22 platforms (10 official, 12 inofficial)
  - regular CI 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 Public Packaging: Social

- Self-magnification: a strong Debian Astro Pure Blend will attract more people to contribute
- Others may contribute to your package: bugfixes etc.
- Debian is “bazaar” style: everyone can follow, everyone can contribute, development is transparent
- Packages may get some attention even if “orphaned”
  - 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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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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Comparison to other approaches

	Debian Astro	Fedora Astronomy	STScI AstroConda	ESO SciSoft
Release year	$\geq$ 2017	2016	2016	2014
Operating System	Linux+	Linux	Linux,Mac	Linux
Binary Packages	227	73	75	102
Integrated in OS	yes	yes	no	no
Install as Non-root	no	no	yes	no
All sources available	yes	yes	partly	no
CI tests	yes	no	no	no
Mailing list	yes	yes	yes	no
Bug tracker	yes	yes	(yes)	no

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Older Debian releases

- Stable version: package versions fixed after distribution release
  - currently “Jessie”
  - updates: Only bug fixes, no new versions
- Backports: new versions, need to be maintained!
  - 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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Problems and surprises

- Licensing
  - unclear or unspecified license from upstream
  - files or code copied from somewhere else
  - "stolen" code: Numerical Recipes
- Dependencies and convenience copies
  - non-free
    - try free replacement: IDL → GDL, PGPLOT → giza
    - package for "contrib" area
  - not packaged yet → packaging of dependency needed
  - outdated: try to migrate to latest version
  - local changes: discuss with upstream

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Data files

- Origin often unclear
- License often unclear or restrictive
- Large package size
- Often impossible to create from a “source”
- Possible solutions:
  - Discuss with upstream and on the debian-astro mailing list
  - Try harder ;-)
  - Download during install: package must go to contrib
  - Package in non-free

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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`
- Alioth project:
  `https://alioth.debian.org/projects/debian-astro`
- Git repositories:
  `http://anonscm.debian.org/cgit/debian-astro/packages`
- IRC: `irc://irc.debian.org/debian-astro`

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Thank you

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Debian Astro Team Uploaders

- Axel Beckert
- Vincent Hourdin
- Ben Keller
- Josue Ortega
- Vincent Prat
- Paul Sladen
- Roger Wesson
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- Filip Hroch
- Gijs Molenaar
- Thibaut Paumard
- Leo Singer
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