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debian astronomy

Debian Astro & Trixie

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Introduction

Debian Astro is a Debian Pure Blend providing astronomical software in a reproducible environment. It is fully integrated into the Debian distribution, ensuring long-term stability, multi-architecture support, and close alignment with upstream projects. Debian derivatives such as Ubuntu and Linux Mint also package Debian Astro, extending its reach to a broader scientific user base.

The blend offers a curated collection of tools for data analysis, visualization, simulation, and instrument control, covering both modern Python-based workflows and legacy software widely used in the astronomy community. Its packaging and maintenance are driven by a global volunteer team, leveraging Debian's rigorous QA, CI/CD infrastructure, and reproducible-build policies.

Debian Astro aims to provide researchers, educators, and observatories with a reliable, fully open-source software stack, enabling reproducible science and interoperability across diverse systems.
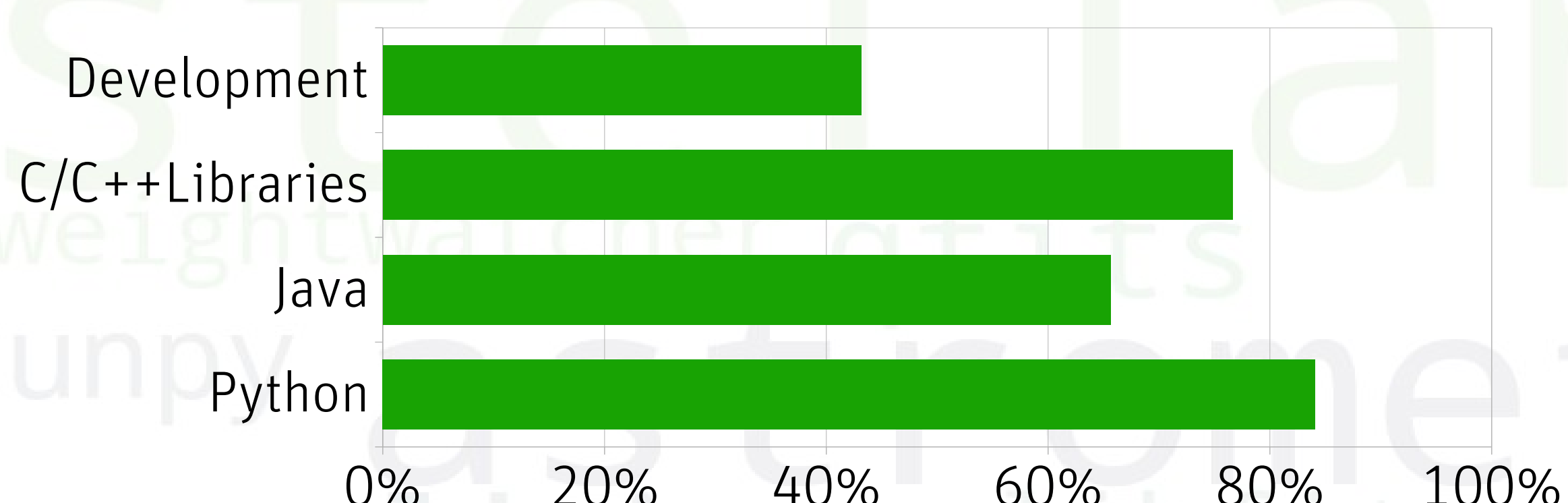
New in Debian Trixie

The Debian 13 "Trixie" release brings significant updates and improvements to Debian Astro, enhancing reproducibility, maintainability, and usability for the astronomy community:

- Python ecosystem modernization: Full compliance with Python 3 policies, updated Astropy (7.0), NumPy, SciPy, and related libraries.

- Up-to-date software packages: Latest versions of many packages like DS9, TOPCAT, Siril, SourceExtractor, Casacore, and IRAF.

- Continuous integration and quality assurance: ~52 % of packages benefit from automated build and test pipelines, supporting reproducible science.

- Expanded architecture support: Builds for 8 official and 11 additional architectures.

- Improved packaging practices: Migration to debhelper 13, reproducible-build flags, and enhanced dependency handling.

These updates ensure that Debian Astro remains a robust, up-to-date environment for data analysis, visualization, and instrumentation in professional and educational settings.

Structure

Debian Astro is organized into metapackages that group software by function, enabling users to install only the components they need. Key metapackages include:
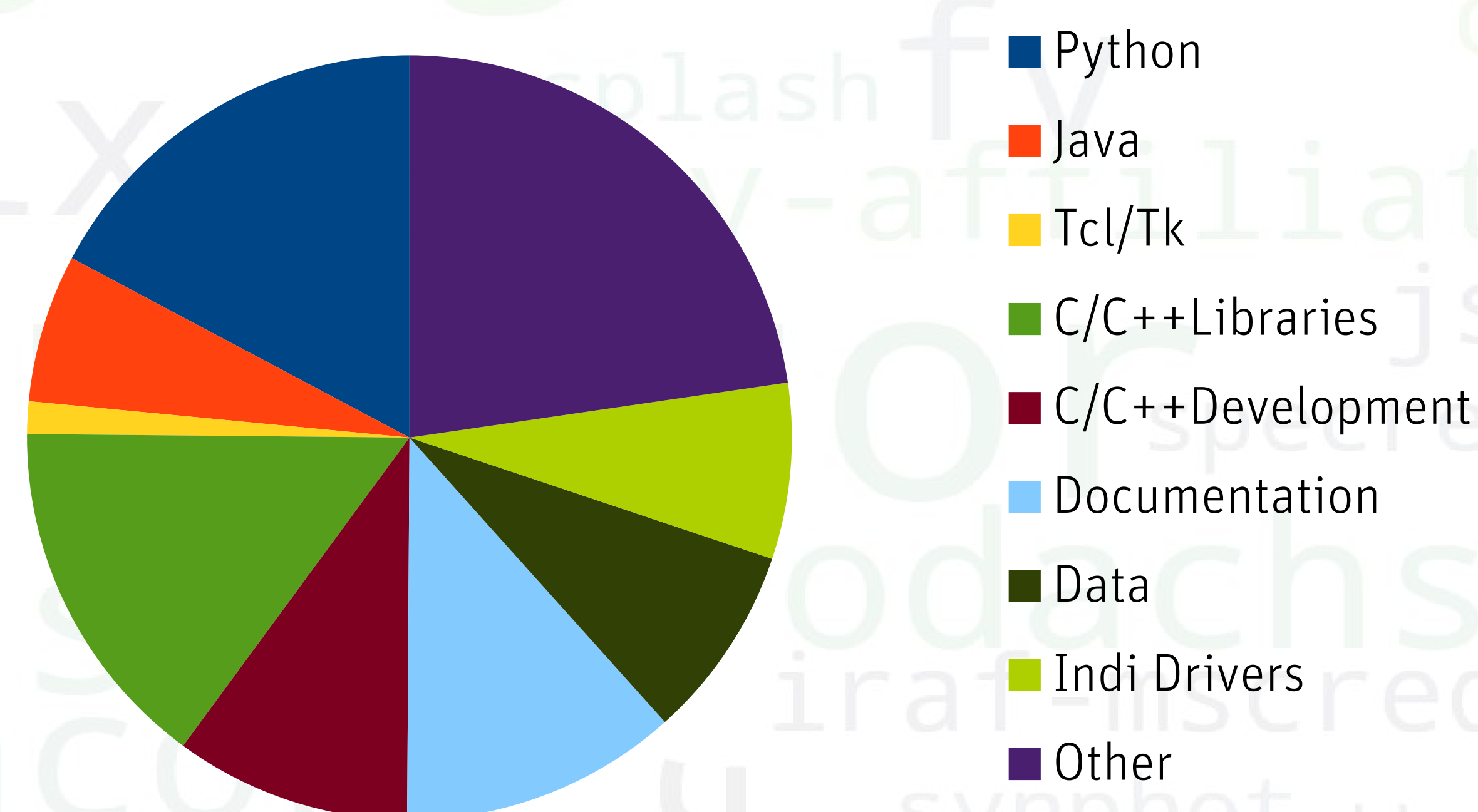
- **devel** – development headers, libraries, and frameworks for scientific computing

- **viewers** – visualization and analysis software

- **datareduction** – programs and libraries to reduce astropysical data

- **simulation** – simulation and modeling tools

- **education** – packages for teaching and outreach

- **java**, **python3**, **tcltk**, **gdl** – packages sorted by language

Under the Debian Astro umbrella, 258 source packages result in 492 binary packages which are maintained according to Debian policies, with full support for modern Python workflows, C/C++ libraries, and legacy astronomy software such as IRAF.

The metapackage structure ensures reproducibility, modularity, and compatibility across architectures, making it easy for researchers and observatories to deploy customized scientific environments.

Debian packages maintained by the Debian Astro Team

Total 492 packages

- Python
- Java
- Tcl/Tk
- C/C++Libraries
- C/C++Development
- Documentation
- Data
- Indi Drivers
- Other

Community and Contributions

Debian Astro is maintained by a global volunteer team of scientists, developers, and educators. Work spans packaging, testing, documentation, and outreach, coordinated via Gitlab with integrated CI/CD pipelines. The project collaborates with upstream software such as Astropy, TOPCAT, DS9, IRAF Community, providing packaged tools that support standardized access to virtual observatory resources. Community engagement through bug reports, packaging contributions, and documentation improvements ensures sustainability, transparency, and reproducibility, making Debian Astro a reliable platform for astronomy research.

CI coverage for Debian Astro packages

Development, C/C++Libraries, Java, Python — 0% 20% 40% 60% 80% 100%