Package ‘ggsky’

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Type Package

Title Galactic and Equatorial Coordinate Implementation for 'ggplot2'

Version 0.1.0

Description Simple tools to draw sky maps in 'ggplot2' using galactic or equatorial coordinates. Includes custom coordinate systems, grid labels, and helpers for sky map breaks.

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URL https://uskovgs.github.io/ggsky/

BugReports https://github.com/uskovgs/ggsky/issues

Imports ggplot2, grid

Suggests knitr, rmarkdown

VignetteBuilder knitr

Encoding UTF-8

LazyData true

RoxygenNote 7.3.3

Collate 'data.R' 'sky_utils.R' 'sky_projection.R' 'sky_segmentize.R' 'sky_grobs.R' 'coord_galactic.R' 'coord_equatorial.R' 'sky_scales.R'

Depends R (>= 3.5)

NeedsCompilation no

Author Grigory Uskov [aut, cre, cph] (ORCID: <https://orcid.org/0000-0002-0274-1350>)

Maintainer Grigory Uskov <uskov.russia@gmail.com>

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`artss15` *ARTSS1-5 X-ray Source Catalog*

Description

ARTSS1-5 X-ray Source Catalog

Usage

```
artss15
```

Format

data.frame

name Source name.

raj Right ascension in J2000, degrees.

de Declination in J2000, degrees.

e_pos Position uncertainty, arcseconds.

flux Flux in ‘erg/cm^2/s‘.

e_flux Flux uncertainty in ‘erg/cm^2/s‘.

c_name Cross-identification name.

type Source type.

z Redshift.

l Galactic longitude, degrees.

b Galactic latitude, degrees.

Source

https://cdsarc.cds.unistra.fr/viz-bin/cat/J/A+A/687/A183 (bibcode: 2024A&A...687A.183S)

coord_equatorial *Equatorial Hammer Coordinate System*

Description

Coordinate system for sky maps in equatorial coordinates using a Hammer-Aitoff projection.

Usage

```
coord_equatorial(
  clip = "on",
  label_offset_lon = 0.025,
  label_offset_lat = 0.035,
  munch_deg = 1,
  pad_top_pt = NULL,
  pad_bottom_pt = NULL,
  pad_left_pt = NULL,
  pad_right_pt = NULL,
  clip_on_boundaries = TRUE
)
```

Arguments

`clip` Character scalar. Passed to ‘ggplot2‘ coordinate clipping (‘"on"‘ or ‘"off"‘).

`label_offset_lon` Numeric scalar in npc units. Vertical offset for right-ascension labels relative to the equator.

`label_offset_lat` Numeric scalar in npc units. Outward offset for declination labels relative to the projection outline.

`munch_deg` Numeric scalar. Maximum angular step (in degrees) used to segment paths and polygon edges along great circles before projection.

`pad_top_pt`, `pad_bottom_pt`, `pad_left_pt`, `pad_right_pt` Optional numeric scalars (points) used to reserve external space for axis text. ‘NULL‘ enables automatic sizing.

`clip_on_boundaries` Logical scalar. If ‘TRUE‘, draws an outside mask so geoms are visually clipped to the projection boundary.

Value

A ‘ggplot2‘ coordinate object (a ‘ggproto‘ instance inheriting from ‘CoordEquatorial‘) to be added to a plot.

Examples

```
library(ggplot2)

df <- data.frame(
  ra = c(0, 30, 60, 90, 120),
  dec = c(-20, -5, 10, 25, 15)
)

ggplot(df, aes(ra, dec)) +
  geom_path() +
  coord_equatorial() +
  scale_eq_ra(breaks = seq(0, 330, by = 30)) +
  scale_eq_dec(breaks = seq(-60, 60, by = 30))
```

---

coord_galactic *Galactic Hammer Coordinate System*

Description

Coordinate system for sky maps in galactic coordinates using a Hammer-Aitoff projection.

Usage

```
coord_galactic(
  clip = "on",
  label_offset_lon = 0.025,
  label_offset_lat = 0.035,
  munch_deg = 1,
  pad_top_pt = NULL,
  pad_bottom_pt = NULL,
  pad_left_pt = NULL,
  pad_right_pt = NULL,
  clip_on_boundaries = TRUE
)
```

Arguments

`clip` Character scalar. Passed to ‘ggplot2‘ coordinate clipping (‘"on"‘ or ‘"off"‘).

`label_offset_lon` Numeric scalar in npc units. Vertical offset for galactic-longitude labels relative to the equator.

`label_offset_lat` Numeric scalar in npc units. Outward offset for galactic-latitude labels relative to the projection outline.

`munch_deg` Numeric scalar. Maximum angular step (in degrees) used to segment paths and polygon edges along great circles before projection.

`pad_top_pt`, `pad_bottom_pt`, `pad_left_pt`, `pad_right_pt`
: Optional numeric scalars (points) used to reserve external space for axis text. ‘NULL‘ enables automatic sizing.

`clip_on_boundaries`
: Logical scalar. If ‘TRUE‘, draws an outside mask so geoms are visually clipped to the projection boundary.

Value

A ‘ggplot2‘ coordinate object (a ‘ggproto‘ instance inheriting from ‘CoordGalactic‘) to be added to a plot.

Examples

```
library(ggplot2)

df <- data.frame(
  lon = c(0, 30, 60, 90, 120),
  lat = c(-20, -5, 10, 25, 15)
)

ggplot(df, aes(lon, lat)) +
  geom_path() +
  coord_galactic() +
  scale_gal_lon(breaks = seq(0, 330, by = 30)) +
  scale_gal_lat(breaks = seq(-60, 60, by = 30))
```

`equator` *Celestial equator is the great circle with declination equal to 0 deg.*

Description

Celestial equator is the great circle with declination equal to 0 deg.

Usage

```
equator
```

Format

data.frame

l Galactic longitude, degrees.

b Galactic latitude, degrees.

ra Right ascension, degrees.

Source

https://en.wikipedia.org/wiki/Celestial_equator

scale_eq_dec *Equatorial declination scale settings*

Description

Equatorial declination scale settings

Usage

```
scale_eq_dec(breaks = ggplot2::waiver(), minor_breaks = ggplot2::waiver())
```

Arguments

`breaks`, `minor_breaks`
: Break specification passed to ‘coord_equatorial()‘.

Value

An object consumed by ‘ggplot_add()‘.

scale_eq_ra *Equatorial right-ascension scale settings*

Description

Equatorial right-ascension scale settings

Usage

```
scale_eq_ra(breaks = ggplot2::waiver(), minor_breaks = ggplot2::waiver())
```

Arguments

`breaks`, `minor_breaks`
: Break specification passed to ‘coord_equatorial()‘.

Value

An object consumed by ‘ggplot_add()‘.

scale_gal_lat *Galactic latitude scale settings*

Description

Galactic latitude scale settings

Usage

```
scale_gal_lat(breaks = ggplot2::waiver(), minor_breaks = ggplot2::waiver())
```

Arguments

`breaks`, `minor_breaks`
: Break specification passed to ‘coord_galactic()‘.

Value

An object consumed by ‘ggplot_add()‘.

scale_gal_lon *Galactic longitude scale settings*

Description

Galactic longitude scale settings

Usage

```
scale_gal_lon(breaks = ggplot2::waiver(), minor_breaks = ggplot2::waiver())
```

Arguments

`breaks`, `minor_breaks`
: Break specification passed to ‘coord_galactic()‘.

Value

An object consumed by ‘ggplot_add()‘.

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