Package ‘panstarrs’

February 7, 2022

Title Interface to the Pan-STARRS API
Version 0.1.0
Description An interface to the API for ‘Pan-STARRS1’, a data archive of
the PS1 wide-field astronomical survey. The package allows access to
the PS1 catalog and to the PS1 images. (see
<https://outerspace.stsci.edu/display/PANSTARRS/> for more
information). You can use it to plan astronomical observations, make
guidance pictures, find magnitudes in five broadband filters (g, r, i,
z, y) and more.
License MIT + file LICENSE
URL https://uskovgs.github.io/PanSTARRS/
BugReports https://github.com/uskovgs/PanSTARRS/issues
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checklegal

Description
Checks if this combination of table and release is acceptable.

Usage
checklegal(table, release)

Arguments
- **table**: "mean", "stack", "detection"
- **release**: "dr2", "dr1"

ps1_cone

Description
Do a cone search of the PS1 catalog

Usage
ps1_cone(
    ra,
    dec,
    r_arcmin = 0.05,
    table = c("mean", "stack", "detection"),
    release = c("dr2", "dr1"),
    columns = NULL,
    verbose = FALSE,
    ...
)


ps1_crossmatch

Arguments

ra (degrees) J2000 Right Ascension
dec (degrees) J2000 Declination
r_arcmin (arcmins) Search radius (<= 30 arcmins)
table "mean"(default), "stack", or "detection"
release "dr1" or "dr2"(default)
columns list of column names to include (NULL means use defaults)
verbose print info about request
... other parameters (e.g., nDetections.min = 2)

Value
data.frame

Examples

## Not run:
ps1_cone(ra = 139.334, dec = 68.635, r_arcmin = 0.05, nDetections.gt = 1)
## End(Not run)

ps1_crossmatch Do a cross-match with PS1 catalog

Description

Do a cross-match with PS1 catalog

Usage

ps1_crossmatch(
  ra,
  dec,
  r_arcmin = 0.05,
  table = c("mean", "stack", "detection"),
  release = c("dr2", "dr1"),
  verbose = FALSE
)

Arguments

ra (degrees) numeric vector of J2000 Right Ascension
dec (degrees) numeric vector of J2000 Declination
r_arcmin (arcmins) Search radius (<= 30 arcmins)
table "mean"(default), "stack", or "detection"
release "dr1" or "dr2"(default)
verbose print info about request
Value

data.frame

Examples

## Not run:
ps1_crossmatch(ra = c(268.70342, 168.87258), dec = c(71.54292, 60.75153))

## End(Not run)

---

**ps1_image_color**

Get color image at a sky position

### Description

Get color image at a sky position

### Usage

```r
ps1_image_color(
  ra,
  dec,
  size = 240,
  output_size = NULL,
  filters = "grizy",
  format = "jpg"
)
```

### Arguments

- **ra**: ra position in degrees
- **dec**: dec position in degrees
- **size**: extracted image size in pixels (0.25 arcsec/pixel)
- **output_size**: output (display) image size in pixels (default = size). output_size has no effect for fits format images.
- **filters**: string with filters to include
- **format**: data format (options are "jpg", "png")

### Value

the image url

### Examples

## Not run:
ps1_image_color(ra = 83.633210, dec = 22.014460, size = 1280, filters="grz")

## End(Not run)
ps1_image_gray

Get grayscale image at a sky position

Description

Get grayscale image at a sky position

Usage

ps1_image_gray(
  ra,
  dec,
  size = 240,
  output_size = NULL,
  filter = "g",
  format = "jpg"
)

Arguments

ra            ra position in degrees
dec           dec position in degrees
size          extracted image size in pixels (0.25 arcsec/pixel)
output_size   output (display) image size in pixels (default = size). output_size has no effect for fits format images.
filter        string with filter to extract (one of grizy)
format        data format (options are "jpg", "png")

Value

the image

Examples

## Not run:
ps1_image_gray(ra = 83.633210, dec = 22.014460, size = 1280, filter = "i")

## End(Not run)
ps1_image_list  Get list of images

Description
Query ps1filenames.py service to get a list of images.

Usage
ps1_image_list(ra, dec, size = 240, filters = "grizy")

Arguments
ra    ra position in degrees
dec   dec position in degrees
size  image size in pixels (0.25 arcsec/pixel)
filters  string with filters to include

Details
src: https://ps1images.stsci.edu/ps1image.html

Value
table with the results

Examples
## Not run:
# Crab nebulae image
ps1_image_list(ra = 83.633210, dec = 22.014460, size = 1280, filters = "grz")

## End(Not run)

ps1_image_url  Get URL of images

Description
Get URL of images
Usage

```r
ps1_image_url(
  ra,
  dec,
  size = 240,
  output_size = NULL,
  filters = "grizy",
  format = "jpg",
  color = FALSE
)
```

Arguments

- `ra`: ra position in degrees
- `dec`: dec position in degrees
- `size`: extracted image size in pixels (0.25 arcsec/pixel)
- `output_size`: output (display) image size in pixels (default = size). `output_size` has no effect for fits format images.
- `filters`: string with filters to include
- `format`: data format (options are "jpg", "png" or "fits")
- `color`: if TRUE, creates a color image (only for jpg or png format). Default is return a list of URLs for single-filter grayscale images.

Value

string with the URL

Examples

```r
## Not run:
ps1_image_url(
  ra = 83.633210,
  dec = 22.014460,
  size = 1280,
  format = "jpg",
  filters = "grz",
  color = T)

## End(Not run)
```
ps1_mast_query  
*Perform a MAST query.*

**Description**

Perform a MAST query.

**Usage**

```python
ps1_mast_query(request)
```

**Arguments**

- `request` (list): The MAST request json object

**Value**

Returns response

---

ps1_mast_resolve  
*Get the RA and Dec for an object using the MAST name resolver*

**Description**

Get the RA and Dec for an object using the MAST name resolver

**Usage**

```python
ps1_mast_resolve(name)
```

**Arguments**

- `name` (String): Name of object

**Value**

list of ra, decl

**Examples**

```python
## Not run:
ps1_mast_resolve('Acrux')

## End(Not run)
```
ps1_metadata

Metadata from PS1

Description
Return metadata for the specified catalog and table

Usage
ps1_metadata(
  table = c("mean", "stack", "detection"),
  release = c("dr2", "dr1")
)

Arguments
  table         "mean", "stack", or "detection"
  release       "dr1" or "dr2" (default)

Value
Returns data.frame with columns: name, type, description

Examples
## Not run:
ps1_metadata()
## End(Not run)

ps1_resolve

Get the RA and Dec for objects from PanSTARRS catalog.

Description
Only works for "north" objects with decl > -30. For all objects see function ‘ps1_mast_resolve’.

Usage
ps1_resolve(target_names, full_table = FALSE, verbose = FALSE)

Arguments
  target_names    character vector of target names (see example)
  full_table      show full cross-matched table or only main columns.
  verbose         print info about request
ps1_search

Do a general search of the PS1 catalog (possibly without ra/dec/radius)

Description

Do a general search of the PS1 catalog (possibly without ra/dec/radius)

Usage

```r
ps1_search(
  table = c("mean", "stack", "detection"),
  release = c("dr2", "dr1"),
  columns = NULL,
  verbose = FALSE,
  ...
)
```

Arguments

- `table` : "mean", "stack", or "detection"
- `release` : "dr1" or "dr2" (default)
- `columns` : list of column names to include (NULL means use defaults)
- `verbose` : print info about request
- `...` : other parameters (e.g., nDetections.min = 2).

Value

- `data.frame`
Examples

```r
## Not run:
ps1_search(
  table='detection',
  release='dr2',
  objid = '190361393344112894')

ps1_search(
  table='mean',
  release='dr2',
  objid = '190361393344112894',
  columns = c('objName', 'raMean', 'decMean', 'rMeanPSFMag'))

## End(Not run)
```
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