Accessing Simbad and VizieR with AstroQuery (AstroPy)

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Getting started

You need:

- **AstroPy**: Huge package of functionality useful for astronomers
- **AstroQuery**: Package to query different online services (SIMBAD, VizieR, ...)
- **NumPy**: Standard package for doing maths, anyone should have this!

(Use Google for install instructions)

What can you query with AstroQuery?

Basically everything relevant:

SIMBAD, VizieR, NED, Splatalogue, Besancon, ESO archive, ALMA archive, ADS, SDSS, Spitzer Heritage Archive, OGLE, many more ...
Apparently in progress: Herschel Archive

Examples:

```
from astroquery.simbad import Simbad
from astroquery.vizier import Vizier
```

SIMBAD queries

Some examples for SIMBAD:

```
from astroquery.simbad import Simbad
from astropy import units as u

result = Simbad.query_object('HD105')
```
(Info on object)

```
result = Simbad.query_region('HD105', radius=0.1*u.deg)
```
(Query around an object)

Coordinate queries a little more complex (still simple!)

```
result = Simbad.query_objectids('HD105')
```
(Query all IDs of an object)

Customizing what is returned:

Many options to customize. Most important one:

Simbad.add_votable_fields(`'flux(H)', 'flux_error(H)'`)

(Adds more info to be returned by **Simbad.query_object**(.), by default there is only the main ID and some coordinate information)

Here's a list of all VOTable fields available:

`http://simbad.u-strasbg.fr/simbad/sim-help?Page=sim-fscriptVotableFields`

VizieR queries

Some examples for VizieR:

```
from astroquery.vizier import Vizier
from astropy import units as u

result = Vizier.query_object('sirius')
```

(Query all tables for one object)

```
result = Vizier.query_object(object_name='HD7788',
    catalog='J/A+A/433/1155', radius=20.0*u.arcsec)
```

(Query catalog catalog='J/A+A/433/1155' for entries closer than 20″ from HD7788)

Understanding the output

The output is always an **AstroPy Table** class object or a list of such objects.

This class can be very handy if one understands it.

Basic work with it is also possible without understanding details, Google is your friend!

Documentation of the Table class can be found here:

http://docs.astropy.org/en/latest/api/astropy.table.Table.htmlastropy.table.Table

Some links

https://astroquery.readthedocs.org/en/latest/

https://www.google.com/