

Galpy Tutorial - Preamble



UNIVERSITY OF
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A crash course on
Galactic dynamics
+ Hands-on tutorial on
Galpy orbit modeling

July 31st, 2024

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University of Toronto

Outline

- **Theoretical background**

- Gravity and potentials
- Lagrangian and Hamiltonian formalisms
- Conserved quantities (e.g., energy, ang momentum)
- Orbits in spherical and disk potentials

- **Observational background**

- The Milky Way
- Surveys
- Streams
- The accretion history of the Milky Way
- The effects of satellite accretion

- **Galpy tutorial**

- The basics: installation and getting to know the package
- Generating orbits
- The effect of the Large Magellanic Cloud
- Comparing and modifying potentials

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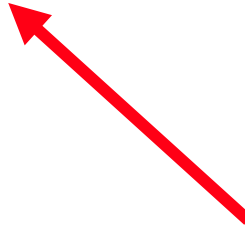
- The basics: installation and getting to know the package
- Generating orbits
- The effect of the Large Magellanic Cloud
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Download the material

- https://mega.nz/folder/UBASRSJY#Bqr0Vh1Ixlkh_ZM0iNPKw

Or in short:

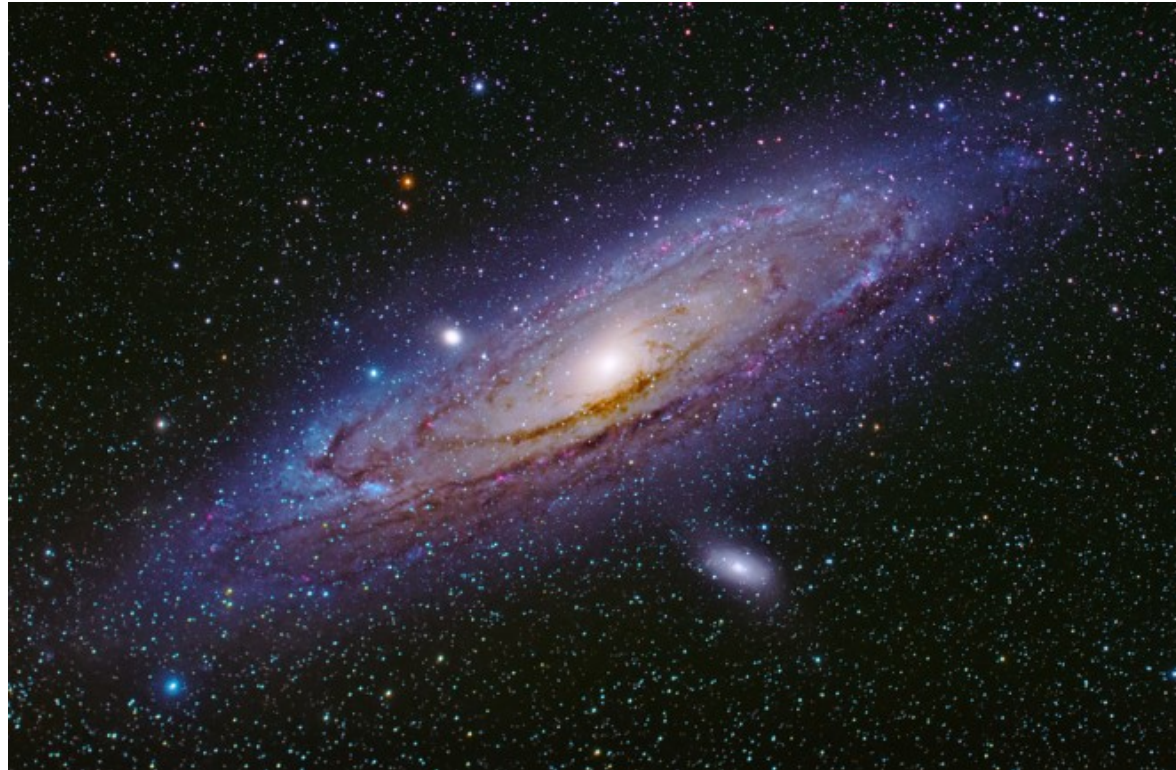
- <https://shorturl.at/Bj4Ne>



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- Python packages required:

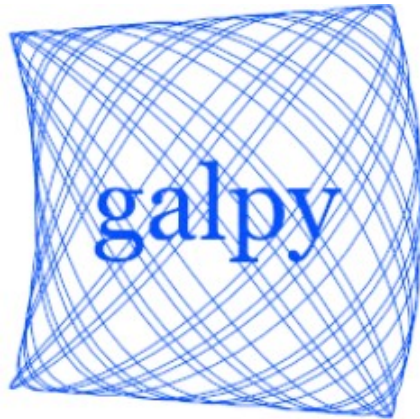
- numpy
- galpy
- pandas
- scipy
- matplotlib
- astropy
- time
- pyvo
- Jupyterlab
- notebook



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- numpy
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- `source /home/gmedina/anaconda3/bin/activate`
- `conda create -n "env-name" python=3.9 scipy numpy matplotlib scipy pandas time jupyterlab notebook astropy pyvo`
- `pip install galpy==1.9.2`

Then, write the following in the command line:

```
>> conda activate "env-name"
```

```
>> ipython kernel install --user --name="env-name"
```

```
>> jupyter notebook
```