
solarsysdaily

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UTILS FUNCTIONS

Function to perform utils.

`utils.coscalc(planetinfo)`

Cosine Angle Calculation

Calculate the angle between earth-planet line and sun-planet line using cosine rules.

Parameters

-planetinfo – Dictionary. The dictionary of ephemeris information from `gen_ephem_today`

Returns

Listed of values of angle theta in radian

Return type:

list

`utils.gen_ephem_today(date)`

Ephemeris generator for given date

Generates the equatorial coordinates and distance to a planet as observed from Earth, and its distance to the Sun.

Parameters

date (*string*) – Date to view the Solar System in YYYY-MM-DD format

Returns

`parseData(files)`

Return Type:

list

`utils.parsedata(filelist, date)`

Parse Data

Read and parse the relevant data from the [Horizons@JPL](https://ssd.jpl.nasa.gov/horizons/app.html#/) (<https://ssd.jpl.nasa.gov/horizons/app.html#/>) `curl` command

Parameters

filelist (*array of strings*) – an array where each element is the name of the file pulled from Horizons for the *ith* planet

Returns

`allplanets`– A list of dictionaries with each planet's relevant information [RA, DEC, HELRANGE (Sun-Planet distance), EARTH RANGE (Earth-Planet distance)], and each dictionary is stored in this list.

Return Type:
list

PLOTTING FUNCTIONS

Function to perform plotting.

`plotting.plotAll(allplanets, thetas, truedist=True)`

The main plotting function. Formatted the same each time, this displays the relative positions of all the planets at the user inputted timestamp.

Inputs:

- **allplanets (list of dictionaries)** - Each planet gets a dictionary with its relevant information (JD, RA, DEC, RANGE), and each dictionary is stored in this list.
- **thetas (list of floats)** - Each planet's updated RA angle
- **truedist (boolean)** - True if you want to see the true relative distances to the planets on the planet.
False if you want an evenly spaced system,

Outputs:

None

`plotting.plotinner(allplanets, thetas)`

Parameters

- **-allplanets** – List of dictionaries. Each planet gets a dictionary with its relevant information (JD, RA, DEC, RANGE), and each dictionary is stored in this list.
- **-thetas** – List of angles generated using `utils.coscalc`

Returns

None

Return Type:

NoneType

`plotting.plotouter(allplanets, thetas)`

Only plot the outer 5 planets

Parameters

- **-allplanets** – List of dictionaries. Each planet gets a dictionary with its relevant information (JD, RA, DEC, RANGE), and each dictionary is stored in this list.
- **-thetas** – List of angles generated using `utils.coscalc`

Returns

None

Return Type:
NoneType

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