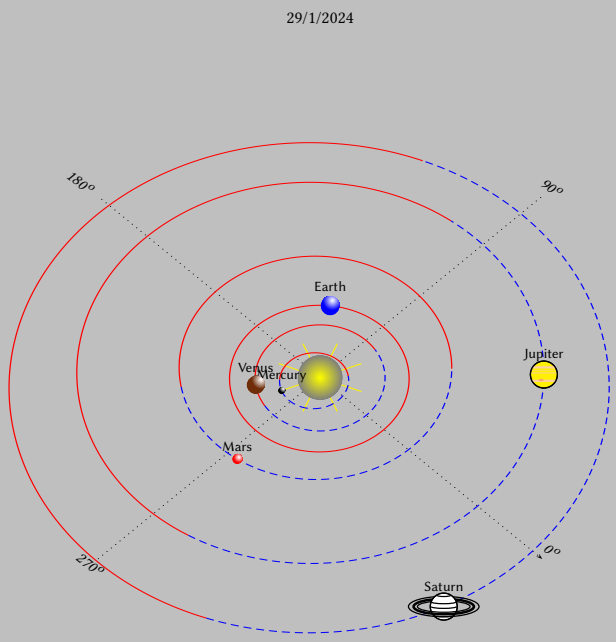
PSTricks

pst-solarsystem

Position of the visible planets, projected on the plane of the ecliptic; v.0.15

February 2, 2024



Package author(s):
Manuel Luque
Herbert Voß

Contents

1 introduction

For the method of calculation, I was guided by:

- that given by *Jean Meeus* astronomical calculations in the book for use by published by the Amateur Astronomical Society of France.
- and that of Guy Serane in *Astronomy & PC published* by Wiley & Sons.

As we can not represent all the planets in the real proportions, only Mercury, Venus, Earth and Mars are the proportions of the orbits and their relative sizes observed. Saturn and Jupiter are in the right direction, but obviously not at the right distance.

The orbits are shown in solid lines for the portion above the ecliptic and dashed for the portion located below.

We can compare the view obtained with the following representation:

http://users.skynet.be/fa274406/rubriques/live/orbites/orbites.htm

The use of the command is very simple, just specify the date of observation with the following parameters, for example:

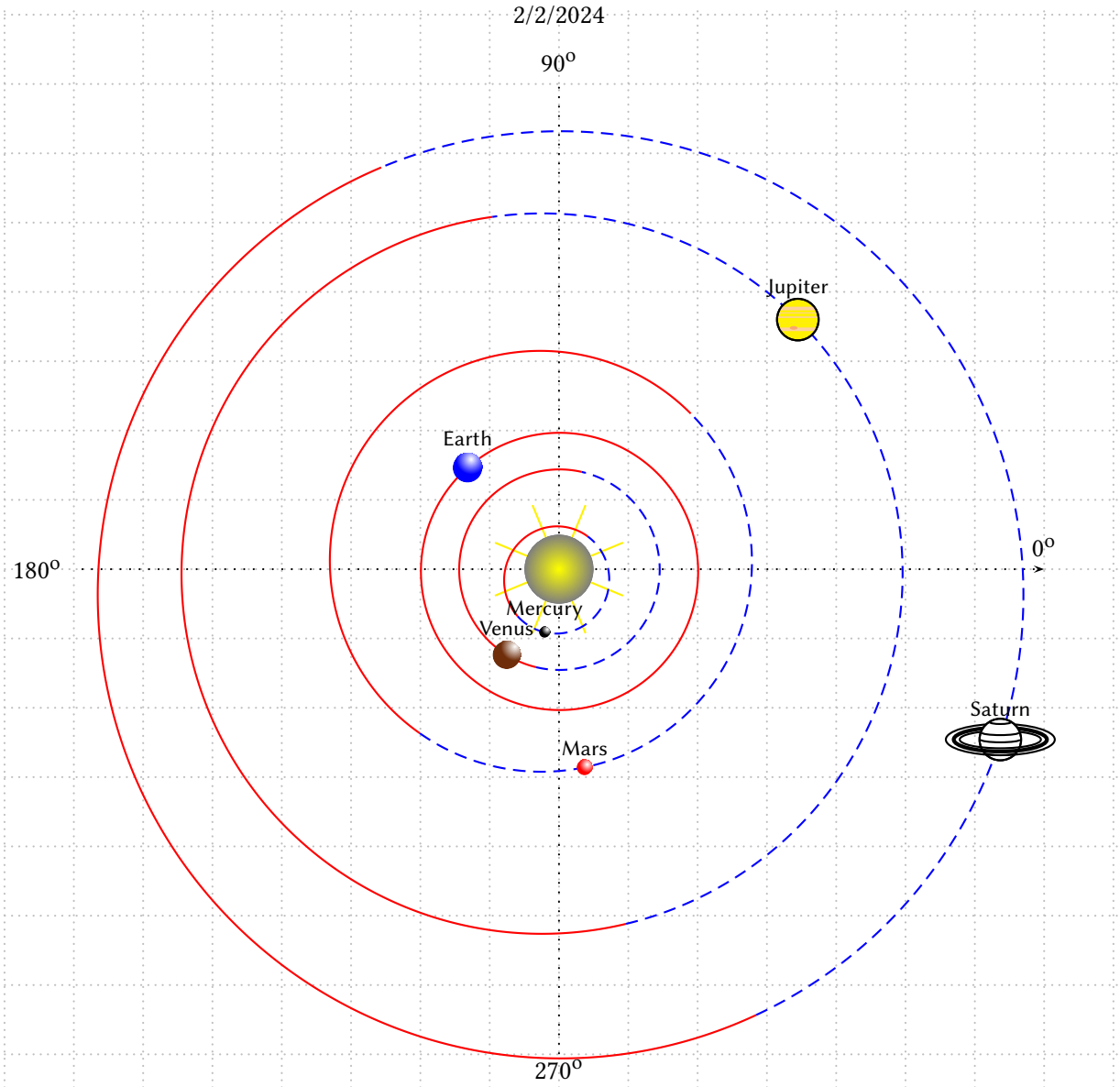
```
\SolarSystem[Day=31,Month=06,Year=2001,Hour=23,Minute=59,Second=59]
```

By default, if no parameter is specified, `\SolarSystem` chooses the current day and hour.

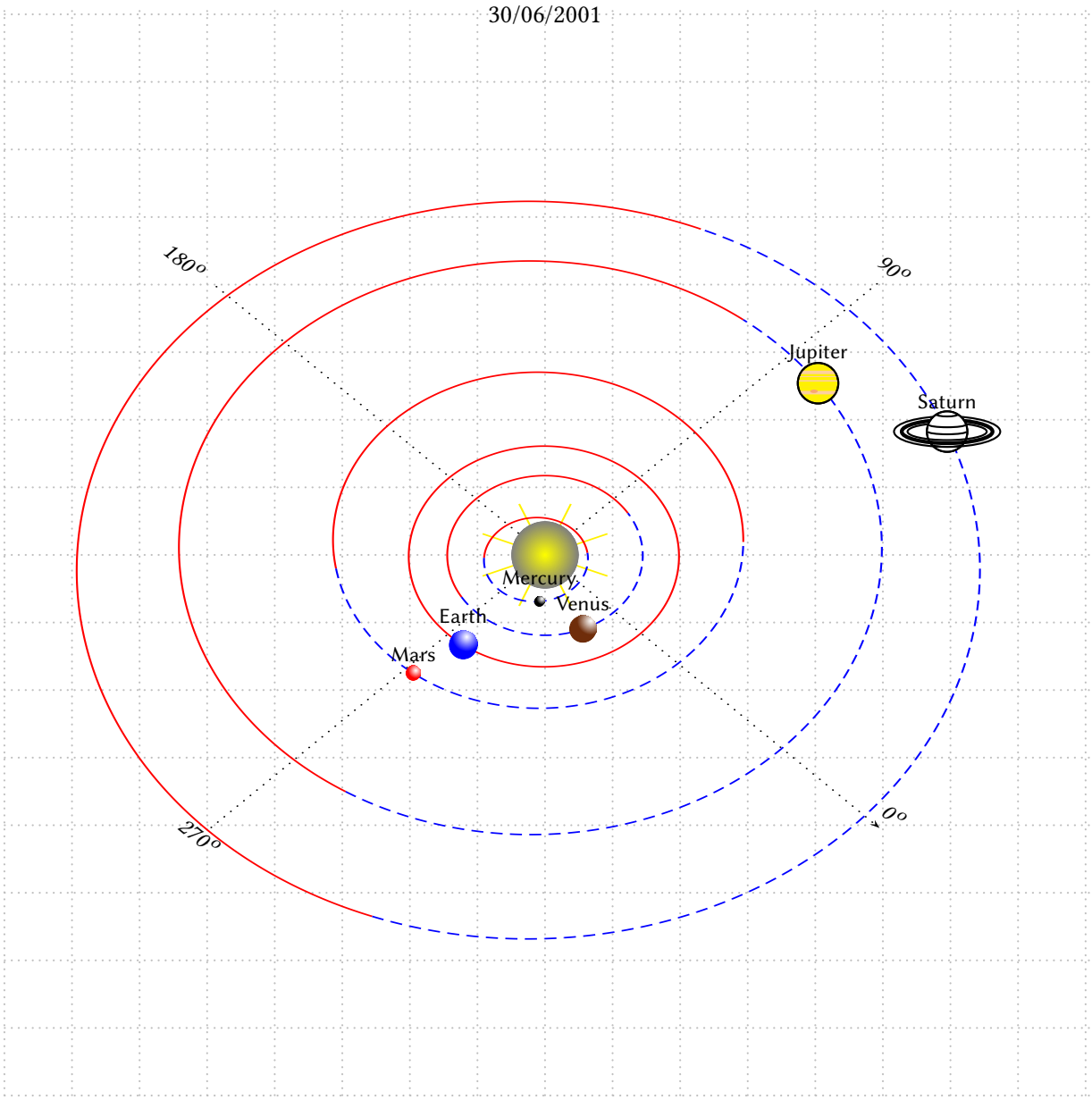
The `solarValues` is enabled by default. It displays the values of longitude, latitude, and the distance in astronomical units.

The accuracy of the calculations is about 0.1 to 0.3 degrees (comparing to ephemeris the Bureau des Longitudes), which is more than enough for a performance graph.

http://www.imcce.fr/fr/ephemerides/formulaire/form_ephepos.php

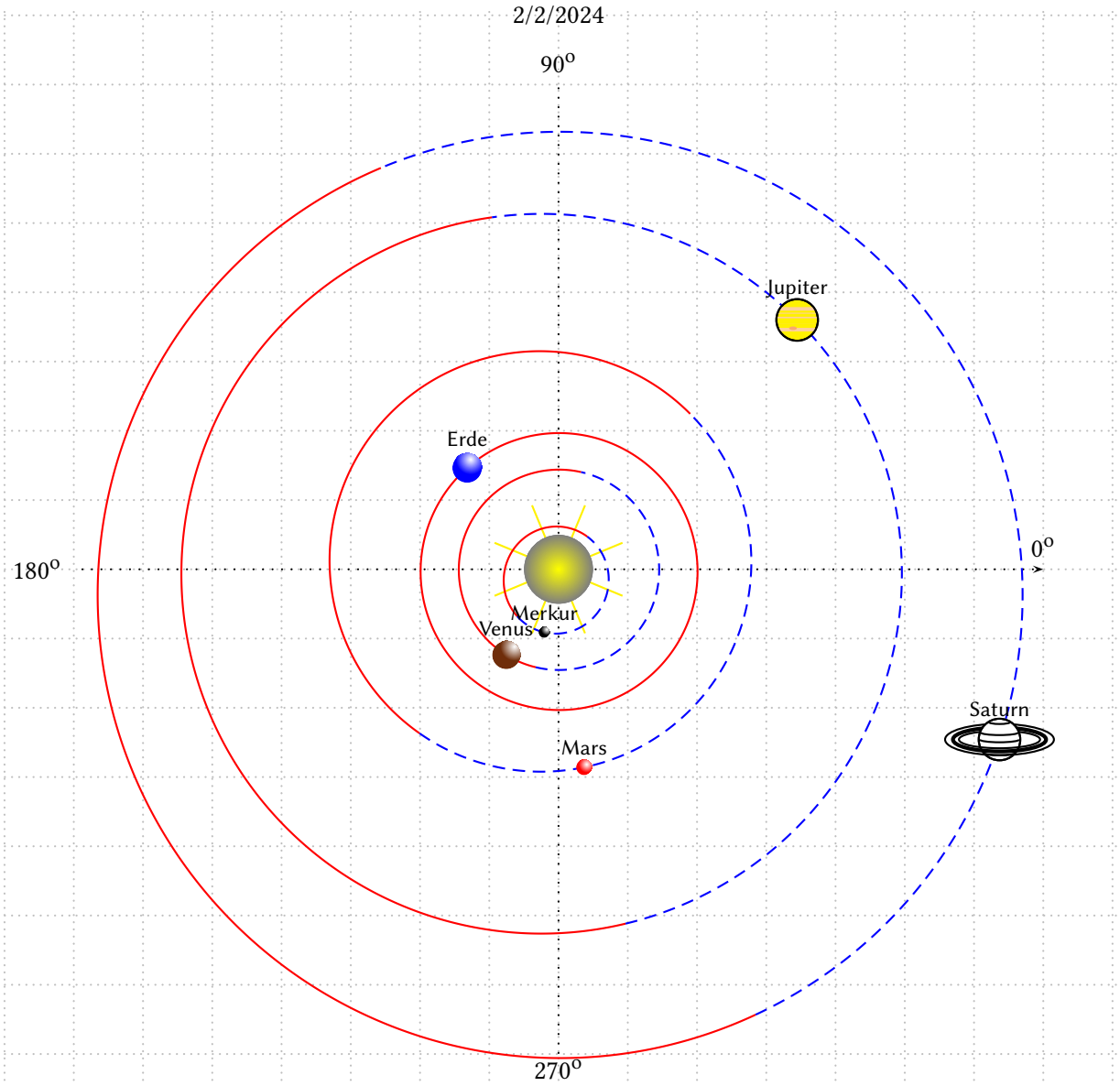


	Mercury	Venus	Earth	Mars	Jupiter	Saturn
longitude at °	257.082	238.633	132.025	277.333	46.26	338.892
latitude at °	-3.35184	1.06505	0	-1.36582	-1.05934	-1.76028
distance in AU	0.466689	0.724707	0.985296	1.44137	4.98418	9.75086

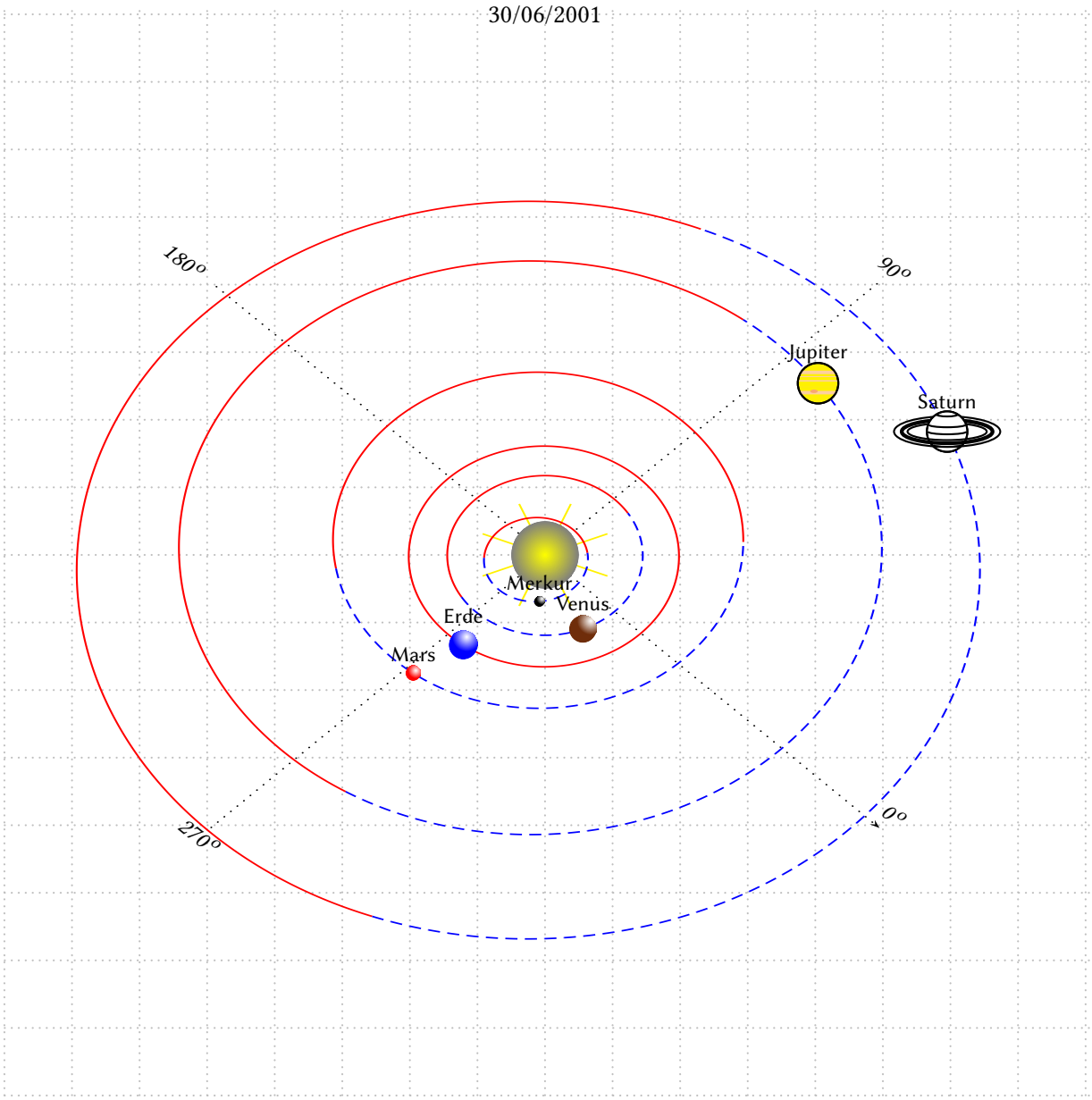



```
\SolarSystem[Day=30,Month=06,Year=2001,
             Hour=23,Minute=59,Second=59,
             viewpoint=1 -1 2,solarValues=false]
```

Possible languages are DE, FR and the default EN. With the setting `language=DE`:



	Merkur	Venus	Erde	Mars	Jupiter	Saturn
Längengrad °	257.082	238.633	132.025	277.333	46.26	338.892
Breitengrad °	-3.35184	1.06505	0	-1.36582	-1.05934	-1.76028
Entfernung in AU	0.466689	0.724707	0.985296	1.44137	4.98418	9.75086




```
\SolarSystem[language=DE]
\SolarSystem[Day=30,Month=06,Year=2001,Hour=23,Minute=59,Second=59,
             viewpoint=1 -1 2,solarValues=false,language=DE]
```

2 List of all optional arguments for pst-solarsystem

Key	Type	Default
Day	ordinary	\number \day
Month	ordinary	\number \month
Year	ordinary	\number \year
Hour	ordinary	12
Minute	ordinary	0
Second	ordinary	0
language	ordinary	EN
solarValues	boolean	true

References

[1] Denis Girou. “Présentation de PSTricks”. In: *Cahier GUTenberg* 16 (Apr. 1994), pp. 21–70.

[2] Michel Goosens et al. *The LaTeX Graphics Companion*. 2nd ed. Reading, Mass.: Addison-Wesley Publishing Company, 2007.

[3] Herbert Voß. *PSTricks – Grafik für TeX und LaTeX*. 7th ed. Heidelberg and Berlin: DANTE – Lehmanns, 2017.

[4] Herbert Voß. *PSTricks – Graphics for TeX and LaTeX*. Cambridge: UIT, 2011.

[5] Herbert Voß. *Typesetting mathematics with LaTeX*. Cambridge: UIT, 2010.

[6] Timothy van Zandt. *PSTricks - PostScript macros for generic TeX*. 1993. URL: http://www.tug.org/application/PSTricks.

[7] Timothy van Zandt and Denis Girou. “Inside PSTricks”. In: *TUGboat* 15 (Sept. 1994), pp. 239–246.

Index