Orbit Viewer

1 Aug. 2007

Makoto Yoshikawa (JAXA)

Daisuke Kuroda (NAOJ)

Orbit Viewer Outline

- Orbit Viewer (OV) is a 3D-like viewer. We developed this viewer in order to help people to understand the orbits and the distribution of the solar system bodies.

- OV is Java Applet, so you can use it by your Web browser. (Browser needs Java and Java3D plugin.)

- OV is very flexible to show orbits, and easy to use.

- Users can create their own data.

- OV was made by Dr. Daisuke Kuroda under the many discussions with M. Yoshikawa.

Notice

- Orbit viewer is free to use.

- You can distribute it freely, but when you distribute it you must attach this document with it. (This document should not be changed.)

- You must not sell it or use it in commercial products.

- Daisuke Kuroda has a copyright of OV.
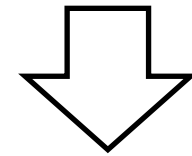
    By the way, he likes coffee :-)

Preparation for your web browser

- Java must work on your browser.

- Java3D plugin must be installed.

- Java3D plugin can be downloaded from

  http://java.sun.com/products/java-media/3D/download.html

How to use
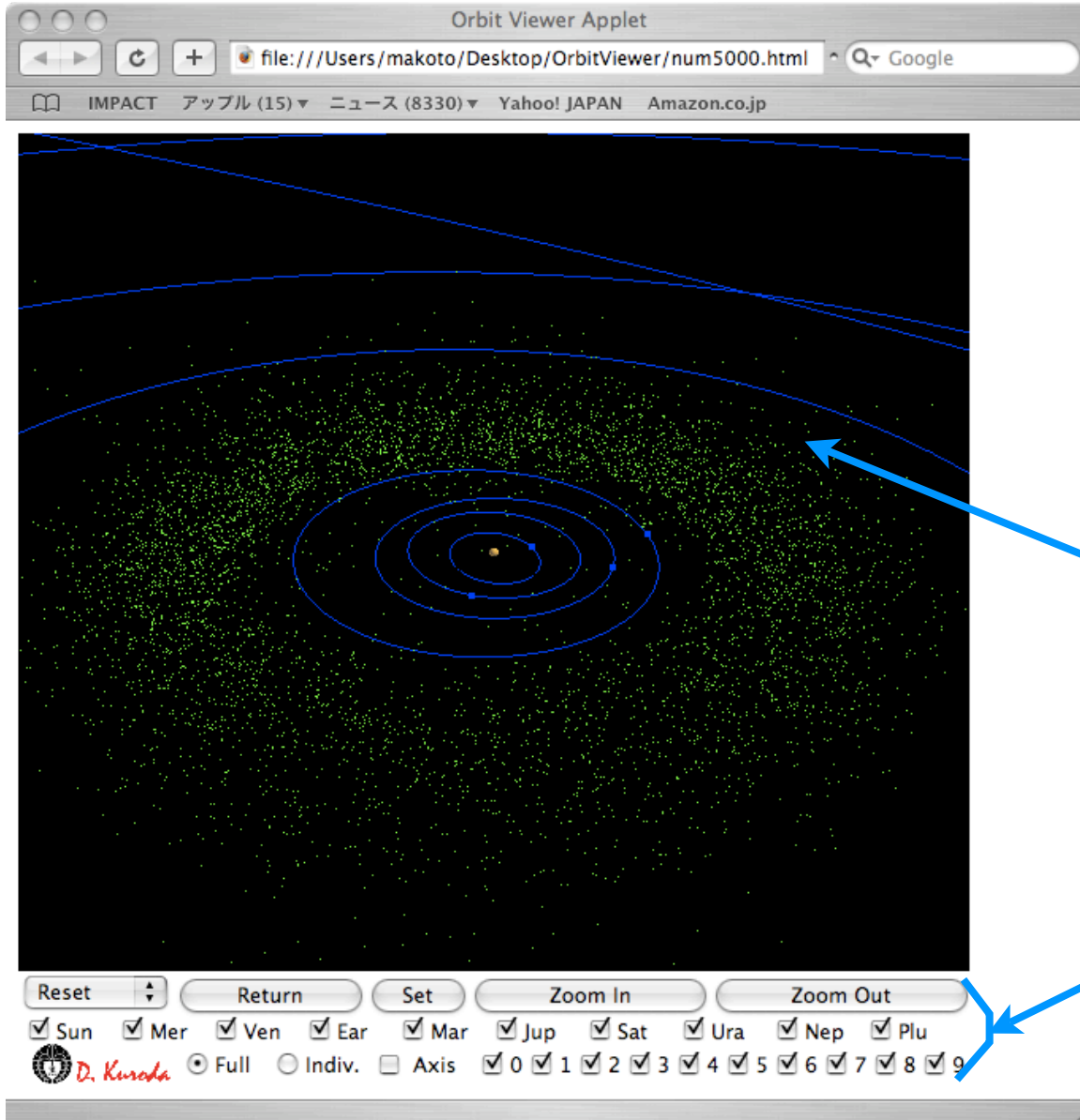
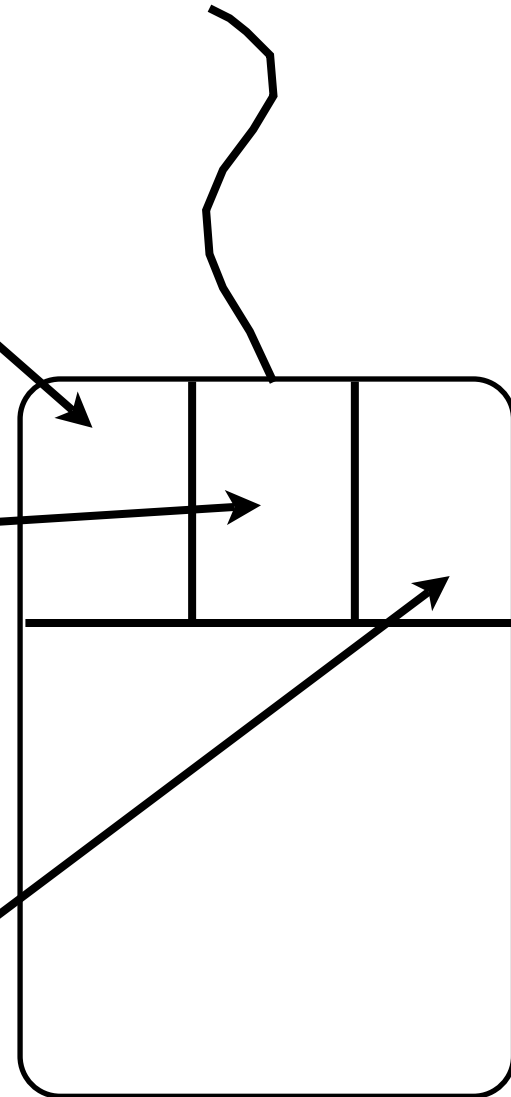Open html file on your browser

Use your mouse to change the view

You can use these buttons to change the view
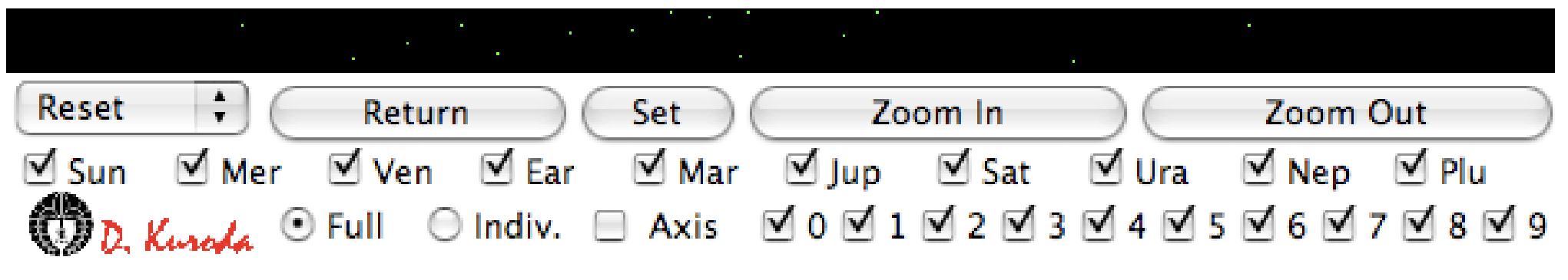
Mouse

Left button + drag

change view angle

Middle button + drag

(if you use one-buttoned Macintosh
mouse, option-kye+mouse drag)

scale up and down

Right button + drag

(if you use one-buttoned Macintosh
mouse, Apple-kye+mouse drag)

shit the origin

Buttons on the viewer

Reset : return to the initial view
          (+X,-X,+Y,-Y,+Z,-Z : change view direction to each axis)

Return Set : memory the current view by Set button and
          return to the view by Return button

Zoom In Zoom Out : Scale up and down

Sun : change of the size of the sun

Mer --- Plu : on and off of planet orbits (not planet itself)

Axis : on and off of X, Y, Z axis

Full, Indiv, 0---9 : on and off of user defined group

The mark of
Kuroda family

7

Files

OrbitViewer

num5000.html
.
.
.

orb_ast9.html
.
.
.

OVapplet_data

OVapplet.jar

OV_Readme.pdf

num5000.dat
.
.
.

orb_ast9.dat
.
.
.

Planets9.dat

Data Files in OVapplet_data

num5000.dat
⋮

orb_ast9.dat
⋮

Planets9.dat

Data file:
- Each html file needs one data file.
- Users make these files as they like.

Planet file:
- Commonly used by all the html files. This file is used to draw the orbits (lines) of planets.
- Users can change this file when they want to change the color or thickness of the orbit lines.
- But they do not have to change the values of orbits. (If users want to show extra solar system, then they can change the values of orbits.)

Structure of "Data file" and "Planet file"

```
# {v1} {v2} {v3} {v4}  #comments
x   y   z
x   y   z
x   y   z
x   y   z
:
# {v1} {v2} {v3} {v4}  #comments
x   y   z
x   y   z
x   y   z
x   y   z
:
# {v1} {v2} {v3} {v4}  #comments
x   y   z
x   y   z
x   y   z
x   y   z
:
```

{v1}   **group number**
  The values are from 0 to 9.
  (For the Planet file, this value has no
  meaning.)

{v2}   **pattern of plot**
  0: dot, 1: solid line,
  2: broken line, 3: dotted line

{v3}   **size**
  The value should be positive.
 If you choose line, this value must not be
  less than 1.0.

{v4} **color**
  BLUE, CYAN, DARK_GRAY, GRAY,
  GREEN, LIGHT_GRAY, MAGENTA,
  ORANGE, PINK, RED, WHITE,
  YELLOW
  (you can use uppercase and lowercase)

Comments on "Data file"

```
# 0 0  4.0 blue       #  Position of planets
   0.35051    0.01530  -0.03092
  -0.40557   -0.60014   0.01520
   0.83003   -0.57938   0.00001
   1.38450   -0.09660  -0.03604
  -4.97263   -2.23394   0.12055
  -4.78664    7.72276   0.05604
  18.67730   -7.33835  -0.26918
  21.68870  -20.81496  -0.07119
  -3.47727  -30.49867   4.26811
# 1 0  1.0 green      #    5000
  -0.94312   -2.60489   0.09269
  -1.98447   -1.44018   1.15999
   1.69008    1.05934  -0.30715
   0.74379    2.45620  -0.16432
   2.08002   -2.25049   0.0447
    :
```
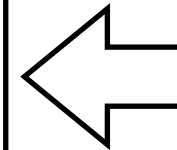
This part is needed to plot the position of planets.

If {v2} is 0 (dot) , following data is usually the position of different objects.
If {v2} is set as line, following data should be the orbit data of one object.

11

html file

Set file name of "Planet file" (usually users do not have to change)

Set display size

Set file name of "Data file"

You must set the maximum line number of the "Data file".

Set initial scale and angle

Parameter of buttons (usually users do not have to change)

```
<HTML>
<HEAD>
<TITLE>Orbit Viewer Applet</TITLE>
</HEAD>
<BODY>
<APPLET archive="OVapplet.jar" code="OVapplet" width=600 height=600>
<PARAM name="Planets" value="OVapplet_data/Planets9.dat">
<PARAM name="Asteroid" value="OVapplet_data/num5000.dat">
<PARAM name="MaxNumber" value="10">
<PARAM name="MaxLine" value="6000">
<PARAM name="Zoom" value="0.25">
<PARAM name="RotX" value="-60.0">
<PARAM name="RotZ" value="+20.0">
<PARAM name="planets_visible" value="9">
<PARAM name="radio_visible" value="1">
<PARAM name="objects_visible" value="9">
Your browser does not support Java, so nothing is displayed.
</APPLET>
</BODY>
</HTML>
```

Contact

If you have any questions, please send e-mail to

Makoto Yoshikawa (makoto@isas.jaxa.jp)

Japan Aerospace Exploration Agency (JAXA)
3-1-1 Yoshinodai, Sagamihara, Kanagawa 229-8510, JAPAN
TEL&FAX:+81-42-759-8341

If you create a nice orbit view, please send us your data. **Enjoy!!**