

Quick start

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[Quick start](#)

PSIMU proposes a lot of options and configurations to propagate an orbit. Anyway, in order to allow to start first simulations very quickly, the **PSIMU GUI**, many parameters are set to default values.

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Launch the main GUI

To launch the **GUI** you only have to double click on **Windows** systems or type :

```
java -jar psimu-xx.x-jar-with-dependencies.jar
```

The first time, the **GUI** is launched, a file named **psimu.properties** is extracted from the jar. This file contains four names of predefined directories:

- **PSIMU_OUTPUT_DIR** where results will be stored by default
- **PSIMU_DATA_DIR** where scenario files will be stored by default
- **ADDITIONAL_PATRIUS_DATA** where it will be possible to store additional data models used by PATRIUS (for example **EOP** parameters or a new **UTC/TAI** gap); see [here](#).
- **PSIMU_TEMP_DIR** temporary directory for database storage.

```
PSIMU_OUTPUT_DIR = PSIMU_OUTPUT
PSIMU_DATA_DIR = PSIMU_DATA
ADDITIONAL_PATRIUS_DATA = PSIMU_DATA/AdditionalPatriusData
PSIMU_TEMP_DIR = PSIMU_TMP
```

So the four directories will be automatically created if they do not exist.

Of course it will be possible to change the values of these four variables but, in that case, **PSIMU** will have to be launched again.

*Note: in versions previous to the V11.4, this properties mechanism did not exist and only a specific directory (where result files was stored) was automatically created : **OUTPUT_JPSIMU***

Initialize mandatory data

Since V11.4, only the orbital parameters (initially set to zero) has to be initialized as it is not very

clever to give a "default" orbit.

Note: for versions previous to the V11.4, attitude law have to be initialized. Since V11.4, it has been decided to set by default an attitude law (in the TNW local frame).

Initial orbit

To do it, enter a non nul semi major axis (for example 7000 km) in the orbit tab:

Loaded context: no context

Initial Orbit | Earth Features | Vehicle Features | Forces Scenario | Maneuvers | Attitude Laws | Integrator | Events | Output | Console

Orbit Pivot TLE Convert

Deactivate conversions ☐

Date: 01/01/2000 00h00m00s UTC +/-

Frame: GCRF

Type: Keplerian

Keplerian Parameters

a: 0.0 km

e: 0.0

i: 0.0 deg

Ω: 0.0 deg

ω: 0.0 deg

Anomaly: true 0.0 deg

μ: Select 398600.4415 km³/s²

=>

Loaded context: no context (*)

Initial Orbit | Earth Features | Vehicle Features | Forces Scenario | Maneuvers | Attitude Laws | Integrator | Events | Output | Console

Orbit * Pivot TLE Convert

Deactivate conversions ☐

Date: 01/01/2000 00h00m00s UTC +/-

Frame: GCRF

Type: Keplerian

Keplerian Parameters *

a: * 7000.0 km

e: 0.0

i: 0.0 deg

Ω: 0.0 deg

ω: 0.0 deg

Anomaly: true 0.0 deg

μ: Select 398600.4415 km³/s²

Attitude law

So, since V11.4 a default law is already selected.

Loaded context: no context (*)

Initial Orbit | Earth Features | Vehicle Features | Forces Scenario | Maneuvers | Attitude Laws | Integrator | Events | Output | Console

Reference Date:

Date mode: ☐ custom ☒ external

External date: 01/01/2000 00h00m00s UTC +/-

Attitude Laws:

Set attitude laws...

Mode: ☐ Switch ☒ Simple

Simple Law: DefaultLaw

Law1

Attitude Law: *

Law name: * DefaultLaw

Law type: LOF

Law evolution: Constant

LOF Att. Law:

Local Orbital Frame: LVLH

☐ Display expert config

Angles bias ☐

=>

Dry mass

It is possible to let the initial dry mass to zero as below (it only raises a warning). Nevertheless, if the user will add some forces, attitudes or anything that needs to divide by the total mass, then, the data will change from warning to error status (in versions previous to the V11.4, there were no status changes but an error message was only sent) and the propagation will not be launched.

Loaded context: no context (*)

Initial Orbit Earth Features **Vehicle Features** Forces Scenario Maneuvers Attitude Laws Integrator Events Output Console

Vehicle: 🚀

Total mass: 0.0 kg

Dry mass 🚀 0.0 kg

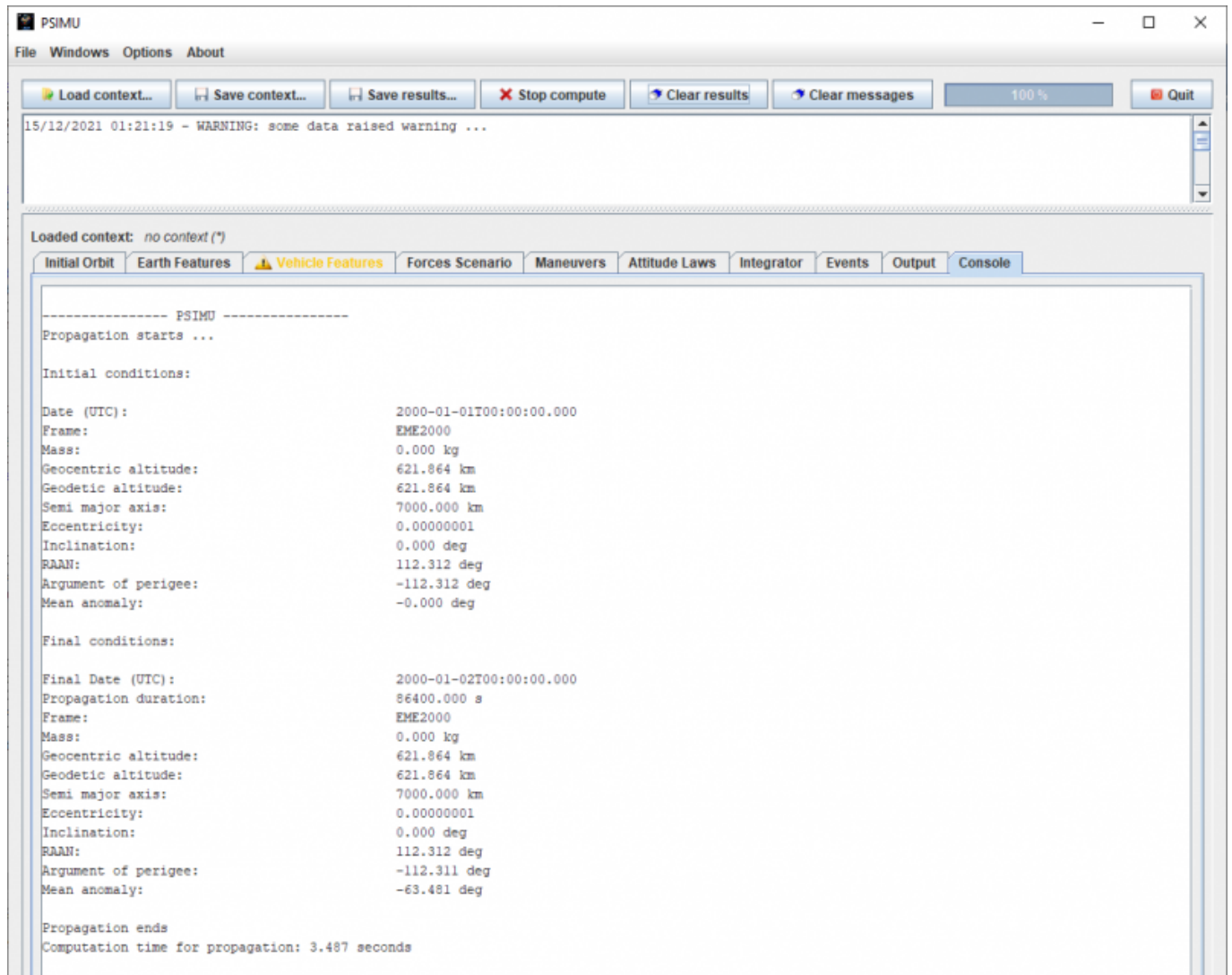
Propulsive properties ☐

Aerodynamic properties ☐

Radiative properties ☐

Propagate

At the end, we have just to start the propagation by clicking on the "**Compute**" button ...



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