NumericalPropagationWithMass 4.4

De Wiki
Aller à : navigation, rechercher
NumericalPropagationWithMass 4.4

```
public class NumericalPropagationWithMass {

    public static void main(String[] args) throws PatriusException,
IOException, ParseException, URISyntaxException {

        // Patrius Dataset initialization (needed for example to get the UTC
time
        PatriusDataset.addResourcesFromPatriusDataset() ;

        // Recovery of the UTC time scale using a "factory" (not to duplicate
such unique object)
        final TimeScale TUC = TimeScalesFactory.getUTC();

        // Date of the orbit given in UTC time scale)
        final AbsoluteDate date = new AbsoluteDate("2010-01-01T12:00:00.000",
TUC);

        // Getting the frame with wich will defined the orbit parameters
        // As for time scale, we will use also a "factory".
        final Frame GCRF = FramesFactory.getGCRF();

        // Initial orbit
        final double sma = 7200.e+3;
        final double exc = 0.01;
        final double per = sma*(1.-exc);
        final double apo = sma*(1.+exc);
        final double inc = FastMath.toRadians(98.);
        final double pa = FastMath.toRadians(0.);
        final double raan = FastMath.toRadians(0.);
        final double anm = FastMath.toRadians(0.);
        final double MU = Constants.WGS84_EARTH_MU;

        final ApsisRadiusParameters par = new ApsisRadiusParameters(per, apo,
inc, pa, raan, anm, PositionAngle.MEAN, MU);
        final Orbit iniOrbit = new ApsisOrbit(par, GCRF, date);

//SPECIFIC
        // Mass model using an Assembly
        final AssemblyBuilder builder = new AssemblyBuilder();

        // Initial mass
        final double dryMass = 1000.;
        builder.addMainPart("MAIN");
        builder.addProperty(new MassProperty(dryMass), "MAIN");
```

```
        final Assembly assembly = builder.returnAssembly();
        final MassProvider mm = new MassModel(assembly);

        // We create a spacecratftstate
        final SpacecraftState iniState = new SpacecraftState(iniOrbit, mm);
//SPECIFIC

        // Initialization of the Runge Kutta integrator with a 2 s step
        final double pasRk = 2.;
        final FirstOrderIntegrator integrator = new
ClassicalRungeKuttaIntegrator(pasRk);

        // Initialization of the propagator
        final NumericalPropagator propagator = new
NumericalPropagator(integrator);
        propagator.resetInitialState(iniState);

//SPECIFIC
        // Adding additional state (change name add to set for V3.3)
        propagator.setMassProviderEquation(mm);
//SPECIFIC

        // Forcing integration using cartesian equations
        propagator.setOrbitType(OrbitType.CARTESIAN);

        // Propagating 1000s
        final double dt = 1000.;
        final AbsoluteDate finalDate = date.shiftedBy(dt);
        final SpacecraftState finalState = propagator.propagate(finalDate);
        final Orbit finalOrbit = finalState.getOrbit();

        // Printing new date semi major axis
        System.out.println();
        System.out.println("Initial semi major axis =
"+iniOrbit.getA()/1000.+" km");
        System.out.println("New date = "+finalOrbit.getDate().toString(TUC)+"
deg");
        System.out.println("Final semi major axis =
"+finalOrbit.getA()/1000.+" km");
        // Printing mass
        System.out.println();
        System.out.println("Mass = "+finalState.getMass("MAIN")+" kg");

    }

}
```

Menu de navigation

Outils personnels

- 18.222.20.3
- Discussion avec cette adresse IP
- Créer un compte
- Se connecter

Espaces de noms

- Page
- Discussion

Variantes

Affichages

- Lire
- Voir le texte source
- Historique
- Exporter en PDF

Plus

Rechercher

Rechercher Lire

PATRIUS

- Welcome

Evolutions

- Main differences between V4.15 and V4.14
- Main differences between V4.14 and V4.13
- Main differences between V4.13 and V4.12
- Main differences between V4.12 and V4.11
- Main differences between V4.11 and V4.10
- Main differences between V4.10 and V4.9

- Main differences between V4.9 and V4.8
- Main differences between V4.8 and V4.7
- Main differences between V4.7 and V4.6.1
- Main differences between V4.6.1 and V4.5.1
- Main differences between V4.5.1 and V4.4
- Main differences between V4.4 and V4.3
- Main differences between V4.3 and V4.2
- Main differences between V4.2 and V4.1.1
- Main differences between V4.1.1 and V4.1
- Main differences between V4.1 and V4.0
- Main differences between V4.0 and V3.4.1

User Manual

- User Manual 4.15
- User Manual 4.14
- User Manual 4.13
- User Manual 4.12
- User Manual 4.11
- User Manual 4.10
- User Manual 4.9
- User Manual 4.8
- User Manual 4.7
- User Manual 4.6.1
- User Manual 4.5.1
- User Manual 4.4
- User Manual 4.3
- User Manual 4.2
- User Manual 4.1
- User Manual 4.0
- User Manual 3.4.1
- User Manual 3.3

Tutorials

- Tutorials 4.15
- Tutorials 4.14
- Tutorials 4.13.5
- Tutorials 4.12.1
- Tutorials 4.8.1
- Tutorials 4.5.1
- Tutorials 4.4
- Tutorials 4.1
- Tutorials 4.0

Links

- CNES freeware server

Navigation

- Accueil
- Modifications récentes
- Page au hasard
- Aide

Outils

- Pages liées
- Suivi des pages liées
- Pages spéciales
- Adresse de cette version
- Information sur la page
- Citer cette page

- Dernière modification de cette page le 3 octobre 2019 à 12:56.