

Numerical Propagation With Impulsive Maneuver 4.1

De Wiki

Aller à : [navigation](#), [rechercher](#)

[Numerical Propagation With Impulsive Maneuver 4.1](#)

```
public class NumericalPropagationWithImpulsiveManeuver {  
  
    public static void main(String[] args) throws PatriusException {  
  
        // 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  
        // Creating a mass model (see also specific example)  
        final AssemblyBuilder builder = new AssemblyBuilder();  
        final double iniMass = 1000.;  
        builder.addMainPart("MAIN");  
        builder.addProperty(new MassProperty(iniMass), "MAIN");  
        final Assembly assembly = builder.returnAssembly();  
    }  
}
```

```

    final MassProvider mm = new MassModel(assembly);

    // We create a spacecraftstate
    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);

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

//SPECIFIC
    // Event corresponding to the criteria to trigger the impulsive
maneuver
    final EventDetector event = new DateDetector(date.shiftedBy(10.));
    // Creation of the impulsive maneuver
    final Vector3D deltaV = new Vector3D(20., 0., 0.);
    final double isp = 300.;
    final ImpulseManeuver imp = new ImpulseManeuver(event, deltaV, isp,
mm, "MAIN", LOFType.TNW);
    // Adding the impulsive maneuver
    propagator.addEventDetector(imp);
    // Adding additional state (change name add to set for V3.3)
    propagator.setMassProviderEquation(mm);

//SPECIFIC

    // Propagating 100s
    final double dt = 100.;
    final AbsoluteDate finalDate = date.shiftedBy(dt);
    final SpacecraftState finalState = propagator.propagate(finalDate);
    final Orbit finalOrbit = finalState.getOrbit();

    // Printing new date and 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");  
    }  
}
```

Récupérée de

«

http://patrius.cnes.fr/index.php?title=NumericalPropagationWithImpulsiveManeuver_4.1&oldid=1858 »

Menu de navigation

Outils personnels

- [18.222.121.24](#)
- [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

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 18 décembre 2018 à 10:31.
- [Politique de confidentialité](#)
- [À propos de Wiki](#)
- [Avertissements](#)
- 