

LocalTime 4.5.1

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```
public class LocalTimeComputation {

    /**
     * @param args
     * @throws PatriusException
     * @throws URISyntaxException
     * @throws IOException
     */
    public static void main(String[] args) throws PatriusException,
IOException, 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("2000-06-21T12:00:00.000",
TUC);

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

        // 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(90.);
        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, CIRF, date);

        // Sun ephemeris
        CelestialBody sunEphemeris = new MeeusSun();
```

```

// Local times
LocalTimeAngle localTime = new LocalTimeAngle(sunEphemeris);

double tlt = localTime.computeTrueLocalTimeAngle(iniOrbit);
double mlt = localTime.computeMeanLocalTimeAngle(iniOrbit);

    System.out.println("TLT = "+angleToHour(tlt)+" h"+"
("+FastMath.toDegrees(tlt)+" deg)");
    System.out.println("MLT = "+angleToHour(mlt)+" h"+"
("+FastMath.toDegrees(mlt)+" deg)");

}

/**
 * Method to transform local time given as an angle to local time in
hours.
 * @param angle local time as an angle (rad)
 * @return      local time in hours
 */
private static double angleToHour ( final double angle ) {

    double hour = 12. + angle*12./FastMath.PI;
    return hour;

}

}

```

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