

```
<simulation xmds-version="2">
  <name>brownian_motion</name>

  <author> Sebastian Wuester </author>
  <description>
    Brownian motion via Langevin equation
  </description>

  <geometry>
    <propagation_dimension> t </propagation_dimension>
  </geometry>

  <driver name="multi-path" paths="1000" />

  <features>
    <auto_vectorise />
    <fftw />
    <benchmark />
    <globals>
      <![CDATA[
        const double mass = 1.0;
        const double damping = 0.2;
        const double Temperature = 0.4;
      ]]>
    </globals>
  </features>

  <noise_vector name="drivingNoise" kind="wiener" type="real" method="dsfmt">
    <components>dW</components>
  </noise_vector>

  <vector name="variables" type="real">
    <components> pos vel </components>
    <initialisation>
      <![CDATA[
        pos = 0.0;
        vel = 0.0;
      ]]>
    </initialisation>
  </vector>

  <sequence>
    <integrate algorithm="SI" interval="2" steps="1000">
      <samples>200</samples>
      <operators>
        <integration_vectors>variables </integration_vectors>
        <dependencies>drivingNoise</dependencies>
        <![CDATA[
          dpos_dt = vel;
          dvel_dt = -damping/mass*vel + dW;
        ]]>
      </operators>
    </integrate>
  </sequence>

  <output format="hdf5">
    <group>
      <sampling initial_sample="yes">
        <moments>position velocity</moments>
        <dependencies>variables</dependencies>
        <![CDATA[
```

```
        position = pos;  
        velocity = vel;  
    ]]  
</sampling>  
</group>  
</output>  
</simulation>
```