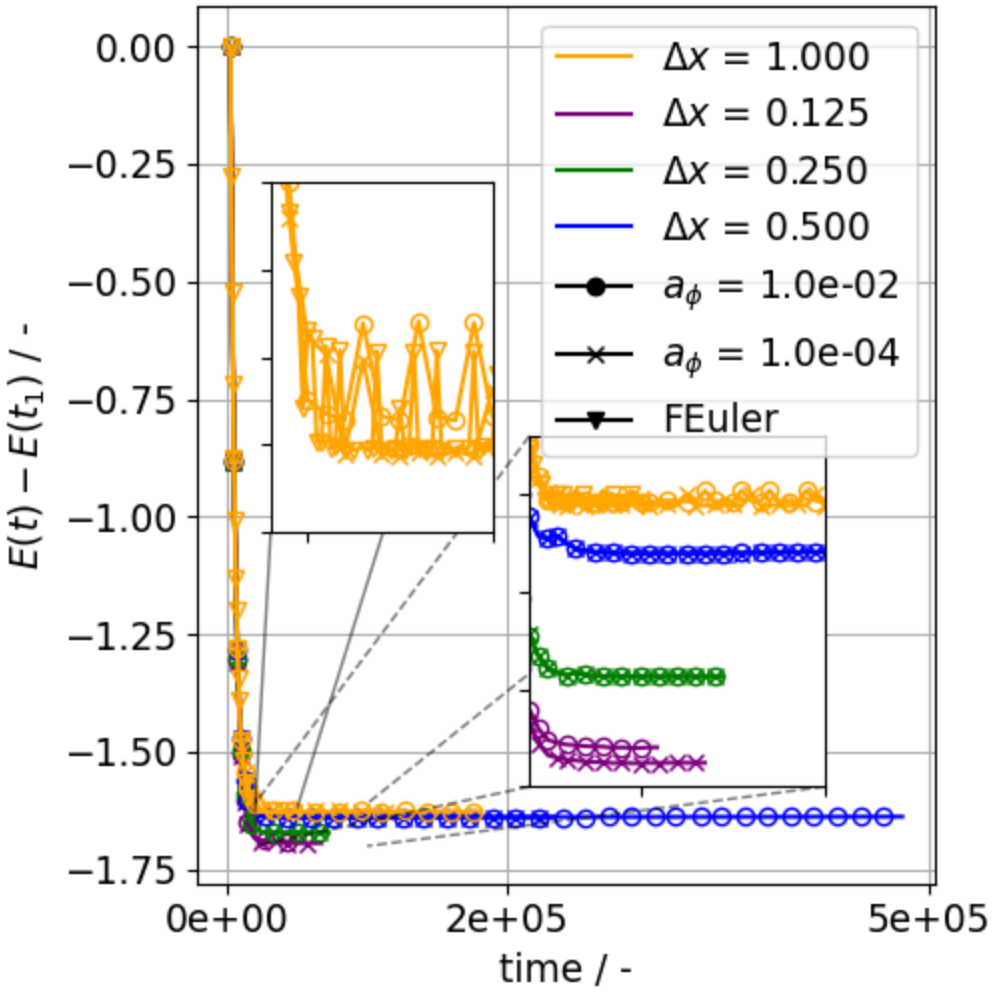
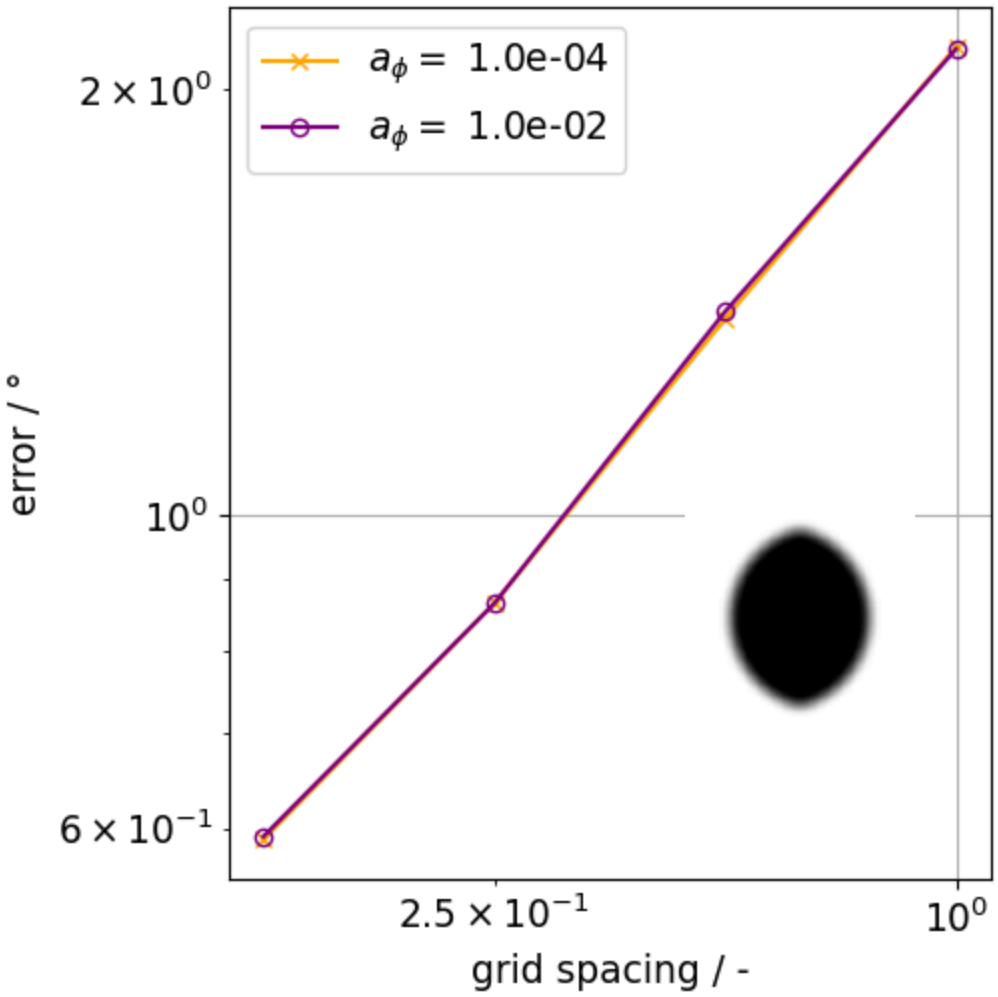
In this notebook the triple junction geometry as described in section 4.2 is analyzed.

These simulations are the only ones which persistently showed energy instability, though the magnitude is comparatively small.

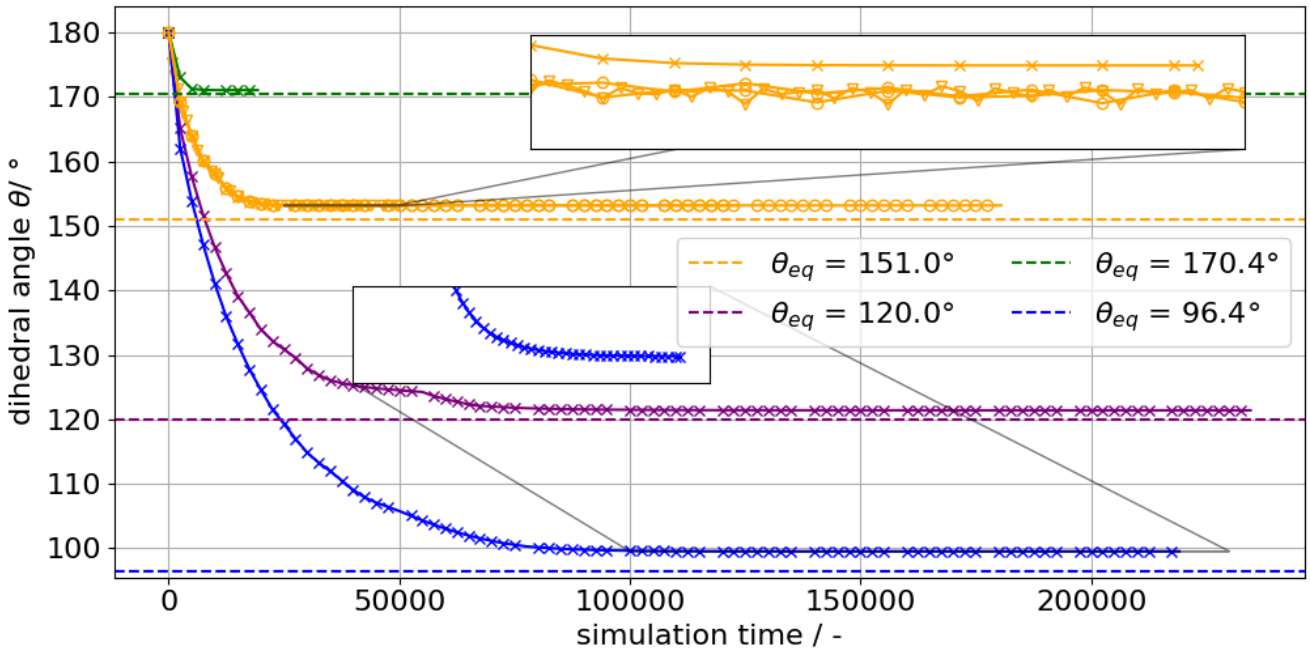


```
angle2d_MPF(STS2(RKL))_rtol1.00e-04_atol1.00e-04_Dbulk1.00e+02_W1.31e+00_gs2.00e+00gg
b1.00e+00dx1.25e-01_nx768_ny1536_cu_  is not energy stable: final energy, largest dE/
dt 5.228053e+02 5.718981e-12
angle2d_MPF(STS2(RKL))_rtol1.00e-04_atol1.00e-04_Dbulk1.00e+02_W1.72e+00_gs2.00e+00gg
b1.00e+00dx2.50e-01_nx384_ny768_cu_  is not energy stable: final energy, largest dE/d
t 5.215518e+02 1.933347e-11
angle2d_MPF(STS2(RKL))_rtol1.00e-04_atol1.00e-04_Dbulk1.00e+02_W2.27e+00_gs2.00e+00gg
b1.00e+00dx5.00e-01_nx192_ny384_cu_  is not energy stable: final energy, largest dE/d
t 5.191604e+02 4.493793e-12
angle2d_MPF(STS2(RKL))_rtol1.00e-04_atol1.00e-04_Dbulk1.00e+02_W3.00e+00_gs2.00e+00gg
b1.00e+00dx1.00e+00_nx96_ny192_cu_  is not energy stable: final energy, largest dE/dt
5.143382e+02 2.610356e-12
angle2d_MPF(STS2(RKL))_rtol1.00e-04_atol1.00e-02_Dbulk1.00e+02_W1.31e+00_gs2.00e+00gg
b1.00e+00dx1.25e-01_nx768_ny1536_cu_  is not energy stable: final energy, largest dE/
dt 5.228054e+02 1.380229e-12
angle2d_MPF(STS2(RKL))_rtol1.00e-04_atol1.00e-02_Dbulk1.00e+02_W1.72e+00_gs2.00e+00gg
b1.00e+00dx2.50e-01_nx384_ny768_cu_  is not energy stable: final energy, largest dE/d
t 5.215518e+02 1.628141e-11
angle2d_MPF(STS2(RKL))_rtol1.00e-04_atol1.00e-02_Dbulk1.00e+02_W2.27e+00_gs2.00e+00gg
b1.00e+00dx5.00e-01_nx192_ny384_cu_  is not energy stable: final energy, largest dE/d
t 5.191610e+02 6.229729e-13
angle2d_MPF(STS2(RKL))_rtol1.00e-04_atol1.00e-02_Dbulk1.00e+02_W3.00e+00_gs2.00e+00gg
b1.00e+00dx1.00e+00_nx96_ny192_cu_  is not energy stable: final energy, largest dE/dt
5.143355e+02 2.202682e-13
angle2d_MPF(FEuler)_dt1.52e-03_Dbulk1.00e+02_W3.00e+00_gs2.00e+00ggb1.00e+00dx1.00e+0
0_nx96_ny192_cu_  is not energy stable: final energy, largest dE/dt 5.143357e+02 7.06
9900e-13
0 energy stable simulations
```

Regardless of the energy instability, we do observe convergence to the sharp interface limit with little influence from the integration tolerance, suggesting that it doesn't affect the result up to being somewhat oscillatory.



From plotting the time-dependent data for $W = 2.5$ and $W = 3$ at the coarsest resolution, we can see that the time to convergence depends on the equilibrium angle, which is easy to understand since more mass needs to be transferred from the initial circular shape equivalent to $\theta = 180^\circ$. We can also see that not all simulations exhibit oscillations in the reported angle, suggesting that energy instability is not a sufficient condition for the angle to oscillate.


dihedral angle θ/ °
simulation time / -
θeq = 151.0°
θeq = 170.4°
θeq = 120.0°
θeq = 96.4°