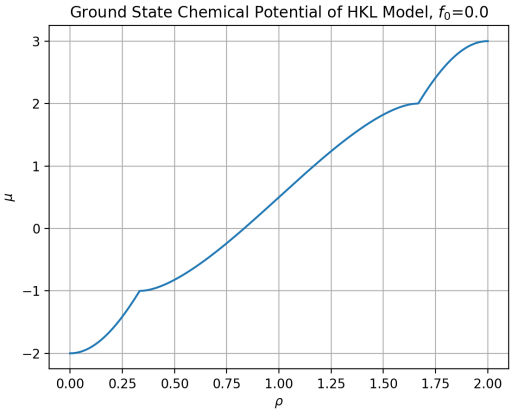
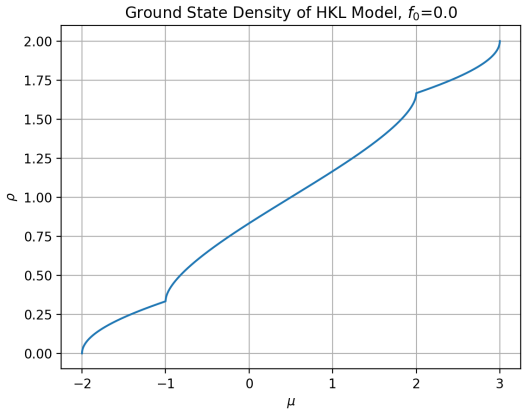
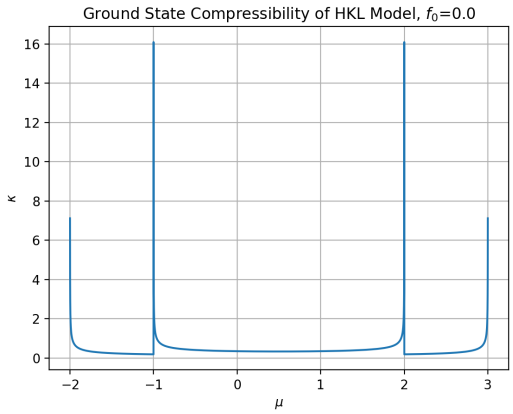
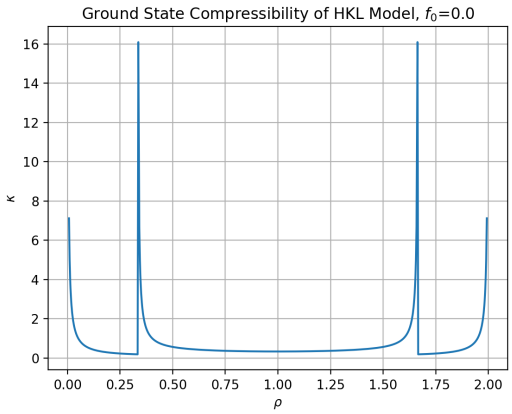
1 $f_0 = 0$ (HK Model), U = t (Weak Interaction)



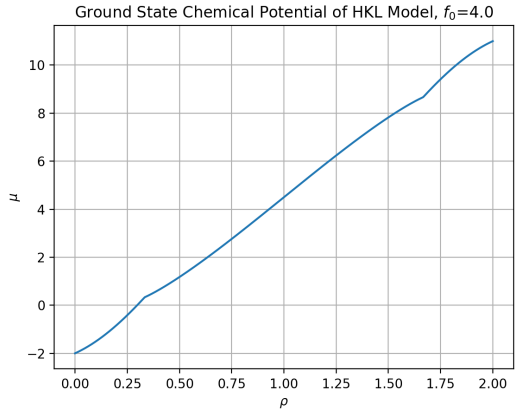


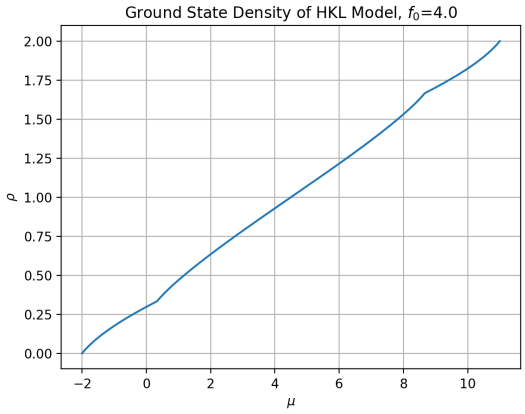


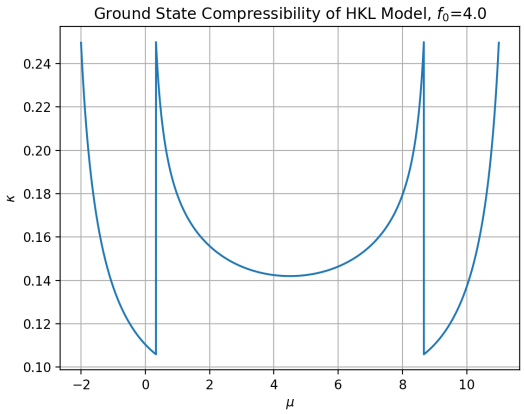


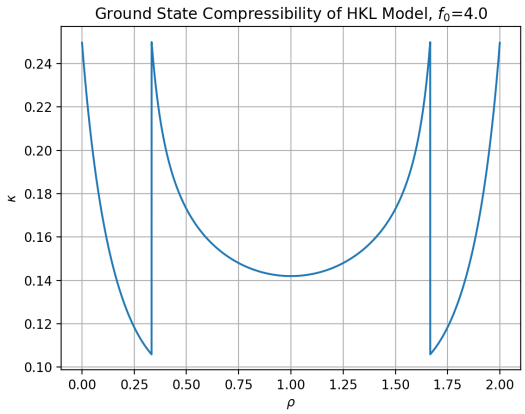
- Note the Singularities of the Compressibility

2 $f_0 = 4t$, $U = t$ (Weak Interaction)



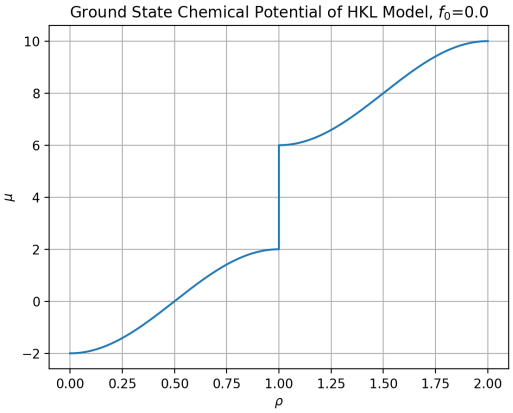


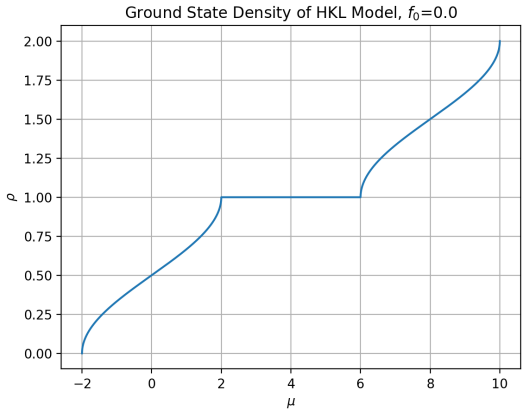


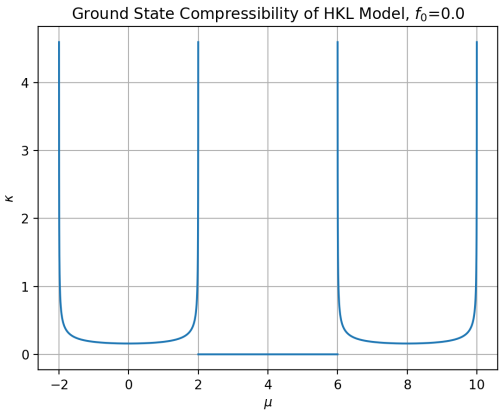


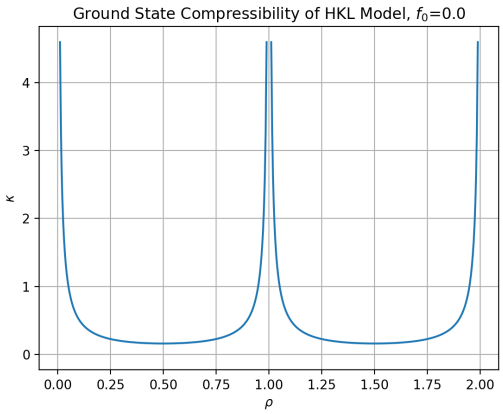
- Singularities of compressibility disappear, limit approaches $1/f_0 = 0.25$

3 $f_0 = 0$ (HK Model), U = 8t (Strong Interaction)

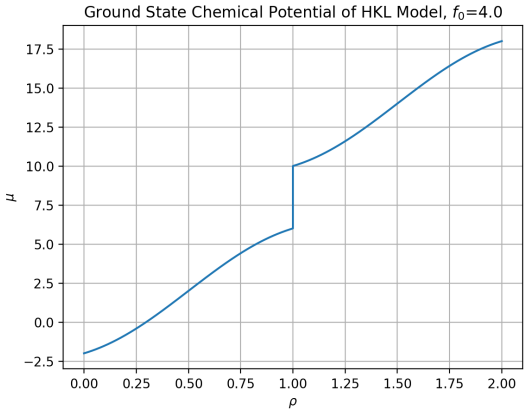


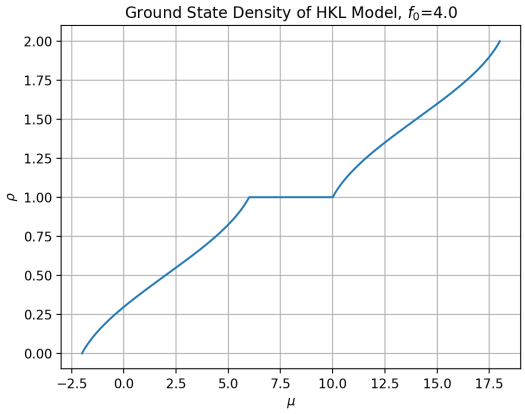


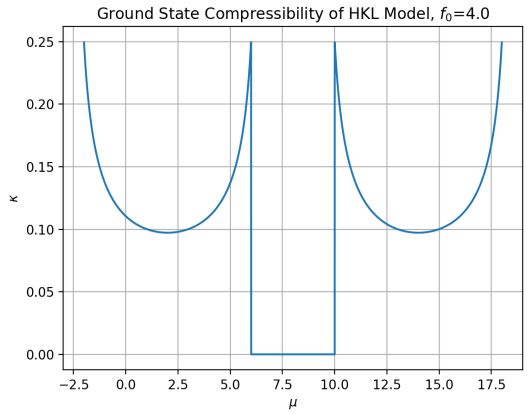


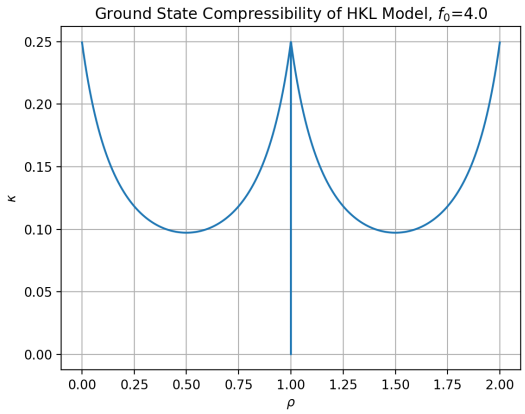


4 $f_0 = 4t$, $U = 8t$ (Strong Interaction)



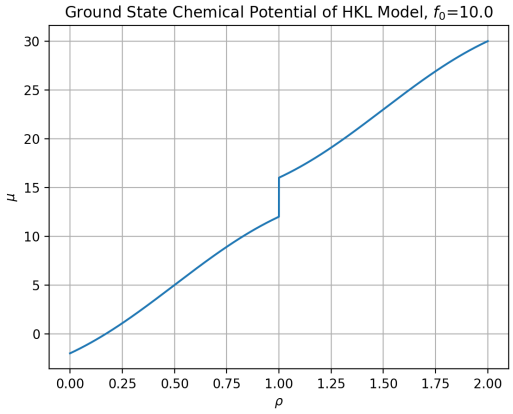


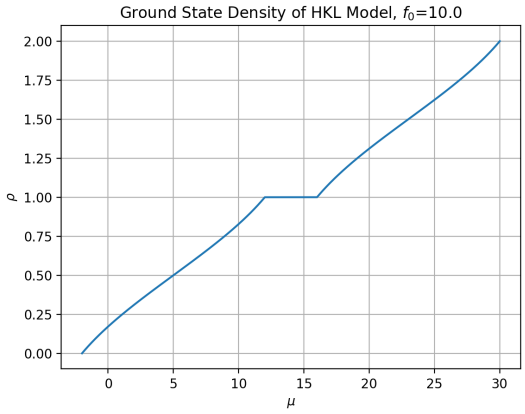


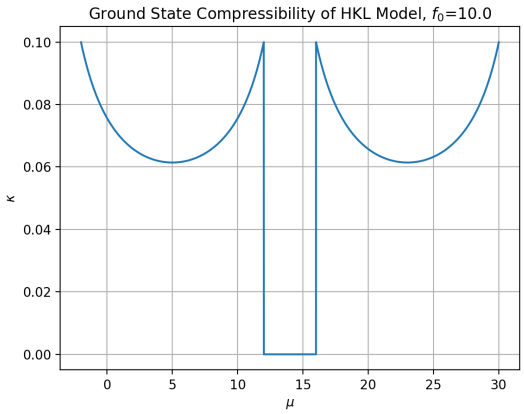


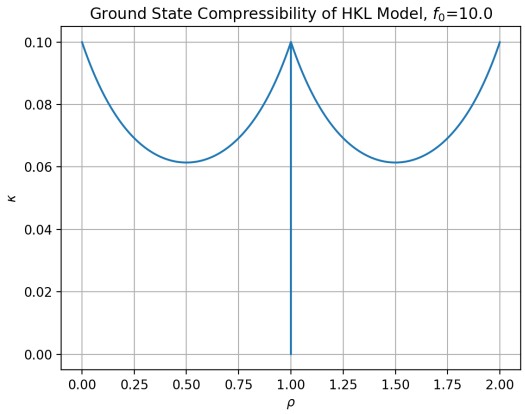
- Note that Band Gap remains unchanged, $\Delta W = 4td$

5 $f_0 = 10t$, U = 8t (Strong Interaction)









- Note that Band Gap remains unchanged, $\Delta W = 4td$, even as f_0 becomes very large