Reading Assignment #22
(due: Monday, October 27, 8 am)

Have a nice break!

Read: Taylor pages 300 – 311

1. Given an effective potential as sketched in Fig. (8.4), which kinds of orbits do you get depending on the energy $E$?

2. Why did Taylor rewrite the equation (8.29) to equation (8.41)? (What can we learn from (8.41)?)

3. Comments: What of this reading and the last class did you find most difficult and/or what did you find most interesting? What would you like to be discussed on Wednesday in class?

Homework Assignment #9
(due: Friday, October 29, 1 pm)

1. Splitting of $\mathcal{L}$: Taylor problem (8.2)
   Redo the steps (8.9) – (8.13) but include the additional potential energy. (2P)

2. Molecule in Gravitational Field: Taylor problem (8.3)
   Hint: First rewrite your Lagrangian in coordinates of the center of mass and the relative distance. Then solve the two resulting Lagrange equations. Finish by rewriting your result in cartesian coordinates. (2P)

3. Effective Potential: Taylor problem (8.13)
   Hint: For part (c) First write the Taylor series for $U_{\text{eff}}(r_0 + \epsilon)$, then use equation (8.29) to get an DE for $\epsilon$. (3P)

   Hint: Start with Eq. (8.49), rearrange so that you can replace $r \cos \phi$ with $x$. Then make sure to use $r^2 = x^2 + y^2$ and complete the square for the x-term. (2P)
   What would you like to be discussed on Friday in class?