

Reading: Chapter 2

Problems:

1. Goldstein, Problem 1-10.
2. Two particles, characterized by charge  $q_1$  and  $q_2$ , respectively, and by mass of  $m_1$  and  $m_2$ , move under the influence of each other in an external uniform electric field  $\vec{E}$ . Examine the Lagrangian for the particles with external and mutual Coulomb potential terms and demonstrate that the particle motion may be studied by considering *separately* the motion of the center of mass and the motion in the particle relative separation.
3. Goldstein, Problem 1-16.
4. Goldstein, Problem 1-22. Here, the motion is confined to a vertical plane.
5. Goldstein, Problem 1-23.