ABSTRACT: Hamiltonian systems arise naturally in Celestial Mechanics. It lies at the origin of and gives birth to many modern theories of dynamical systems. In this talk, I will present some simple models of Hamiltonian systems from Celestial Mechanics where the total energy serves as the Hamiltonian function. Then I will discuss how the energy level determines the motion of celestial objects such as comets and planets in our solar system. If time permits, I will present more advanced models where very complicated dynamical behaviors may appear.