**Trajectory Simulation of Billiard Ball**

**Abstract**

We chose billiard ball's trajectory motion simulation as our team project title. In real world, billiard balls rarely proceed without spins. So, we decide to add a spin-considered model to express it more realistically. Basically, we want to configure the field through a 2-d array and assume a situation in which hitting the ball by cue stick. The physical concepts we will apply are impulse-momentum, momentum conservation, angular momentum conservation, energy conservation. And the variables to be considered include hitting position, hitting force, strike time, restitution coefficient on the wall, and friction. First, we will construct the model of the simulation for the theoretical situation without friction and spin, and secondly, we will construct the model of the simulations for situations with spin. In addition, we want to simulate the shape of billiard tables not only in rectangles but also regular-triangle, circle, ellipses, and case of with obstacles.

**Introduction**

**Main body**

**Summary**