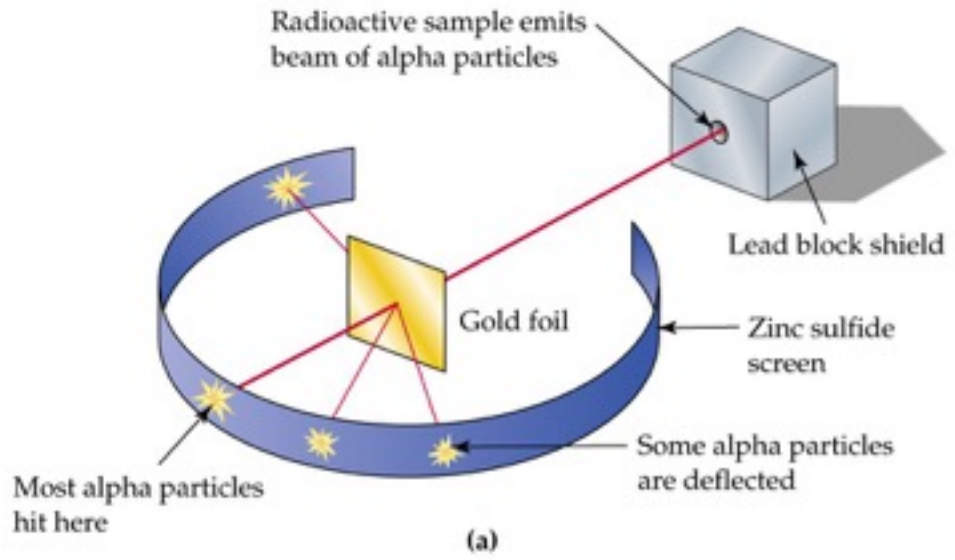
Part 1: The Experimental Set-Up

Starting sometime around 1909, Rutherford began to notice that alpha particles would not always behave in accordance to the plum pudding model of an atom when fired at a piece of gold foil. These observations stimulated further research that was eventually published in 1911 and has been known ever since as Rutherford's Gold Foil Experiment.

Throughout the course of his experiment, Rutherford aimed a beam of alpha particles (small, positively charged particles) at a piece of gold foil that was approximately the same thickness as one atom. A screen was placed behind the foil as a backdrop for the alpha particles to appear upon. Directly above this screen was a microscope that allowed one of the two experimenters to observe any contact made between the alpha particles and the screen. In order for the light of the alpha particles to be observed, the experiment was performed in complete darkness. Also, to further enhance the accurateness of the observations the experimenter that was charged with looking through the microscope sat in the dark of the lab room for at least one hour before performing the experiment.



After the experiment had been set up in accordance to the speculations described above, Rutherford would fire the beam of alpha particles through the piece of foil and observe the location at which the particles landed on the screen.