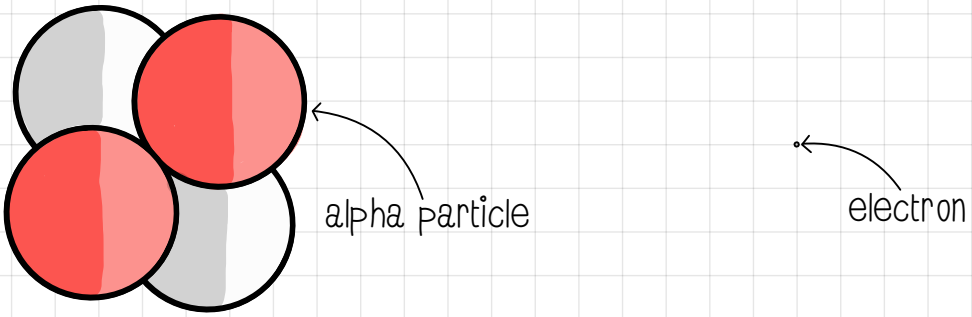
The alpha scattering experiment

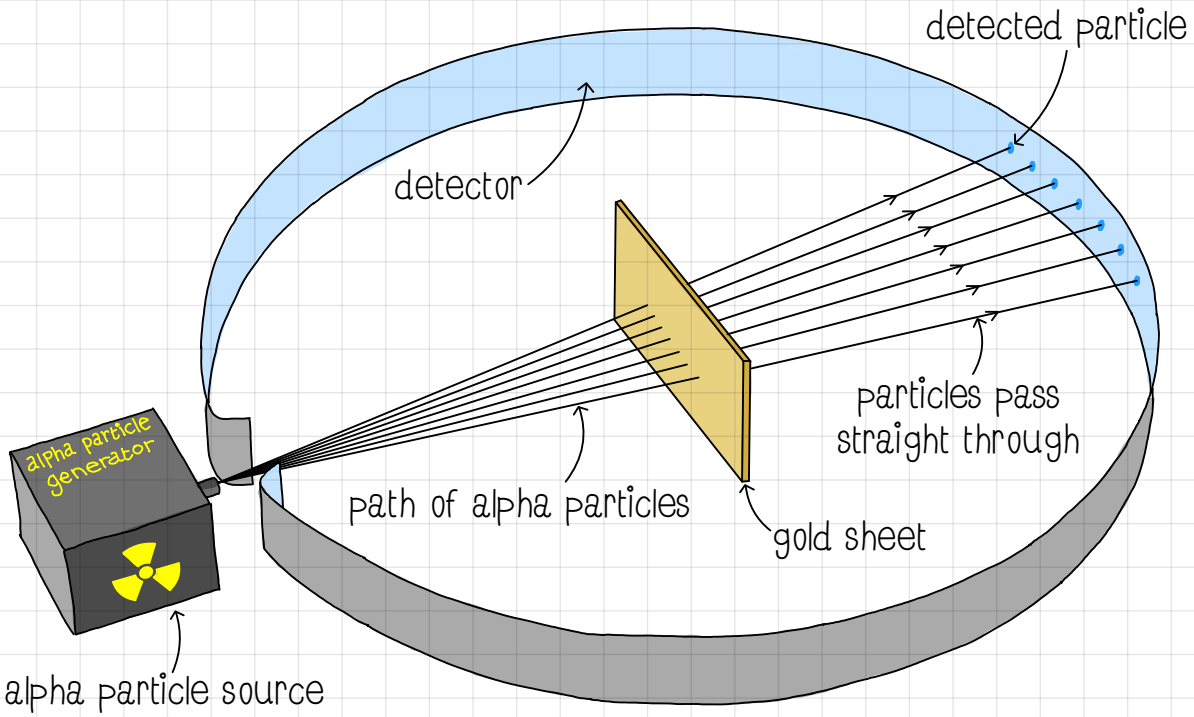
Thomson has derived a model of the atom called the plum pudding model. He theorised that electrons were dispersed in a cloud of positive charge. Rutherford wanted to test this theory. He decided to use alpha particles because he knew they were much bigger than the electrons.



He was going to fire alpha particles at a very thin piece of gold sheet. Essentially the sheet was only one or two gold atoms thick.

Rutherford thought that the plum pudding model was correct. He expected that when he fired the alpha particles at the gold they would pass through and hit the detectors behind the gold sheet.

What Rutherford expected to happen



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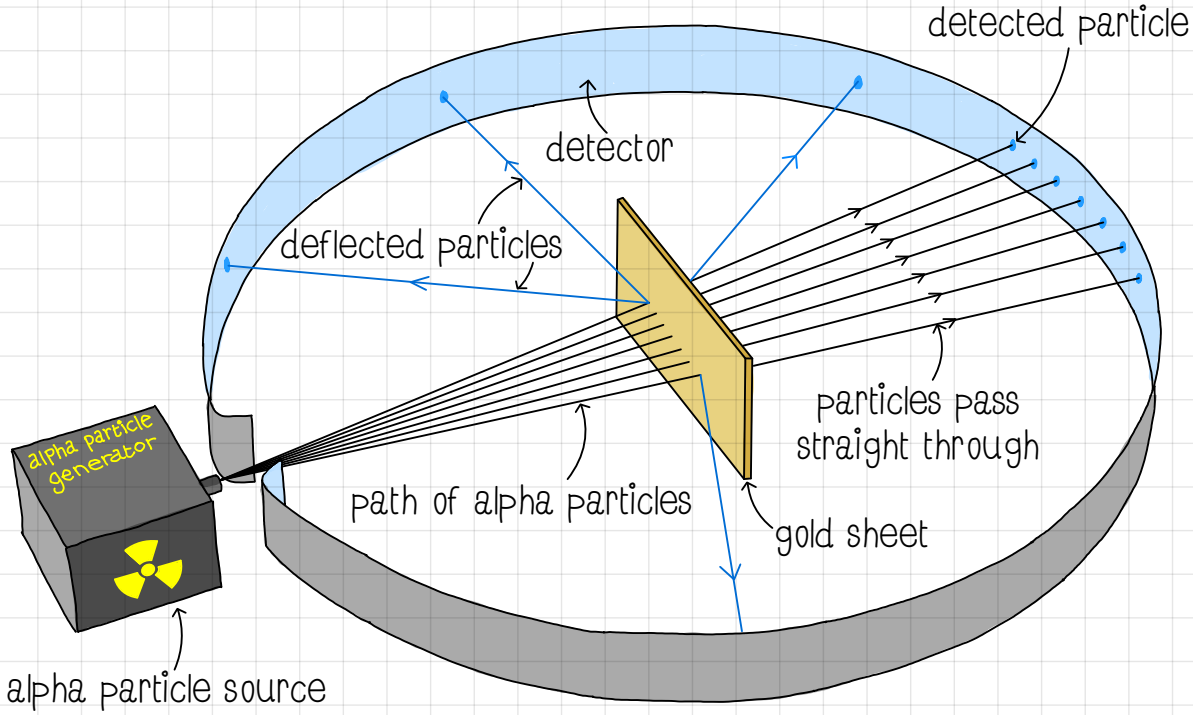
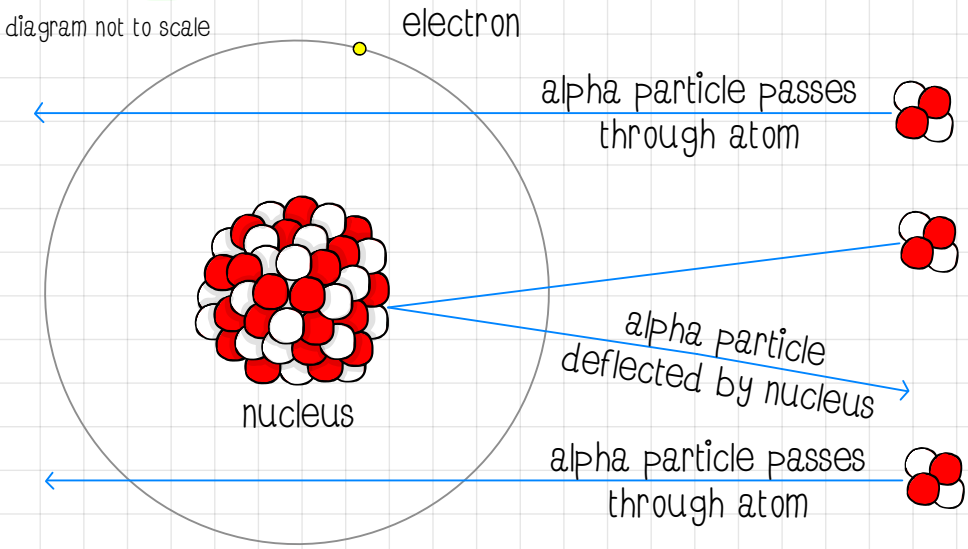
When Rutherford did the experiment he was surprised to discover that although many of the alpha particles passed through, some of the particles were deflected. This confused Rutherford because there was nothing in Thomsons model which would deflect the alpha particle

What actually happened in the experiment



Rutherford developed the nuclear model of the atom to explain the results. He said that the mass of the atom must be concentrated in a very small area in the centre of the atom. This was called the nucleus. He also said that the electrons orbited the atom at a distance.

What happens in the atom



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