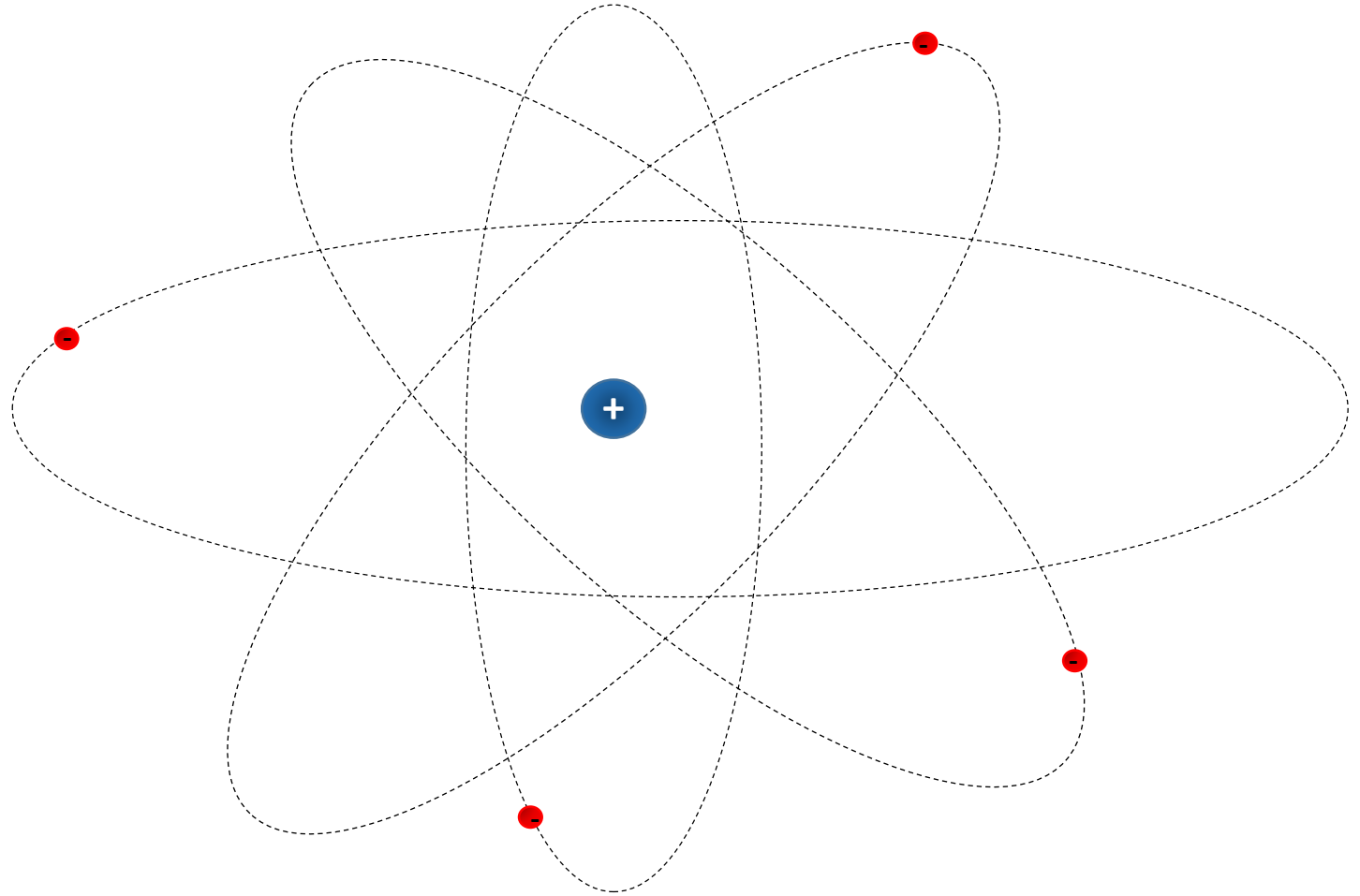


Rutherford's Atomic Model



Ernest Rutherford (1871-1937)



Rutherford's Gold Foil Experiment:

(Geiger-Marsden
Experiment)

Ernest Rutherford



Hans Geiger

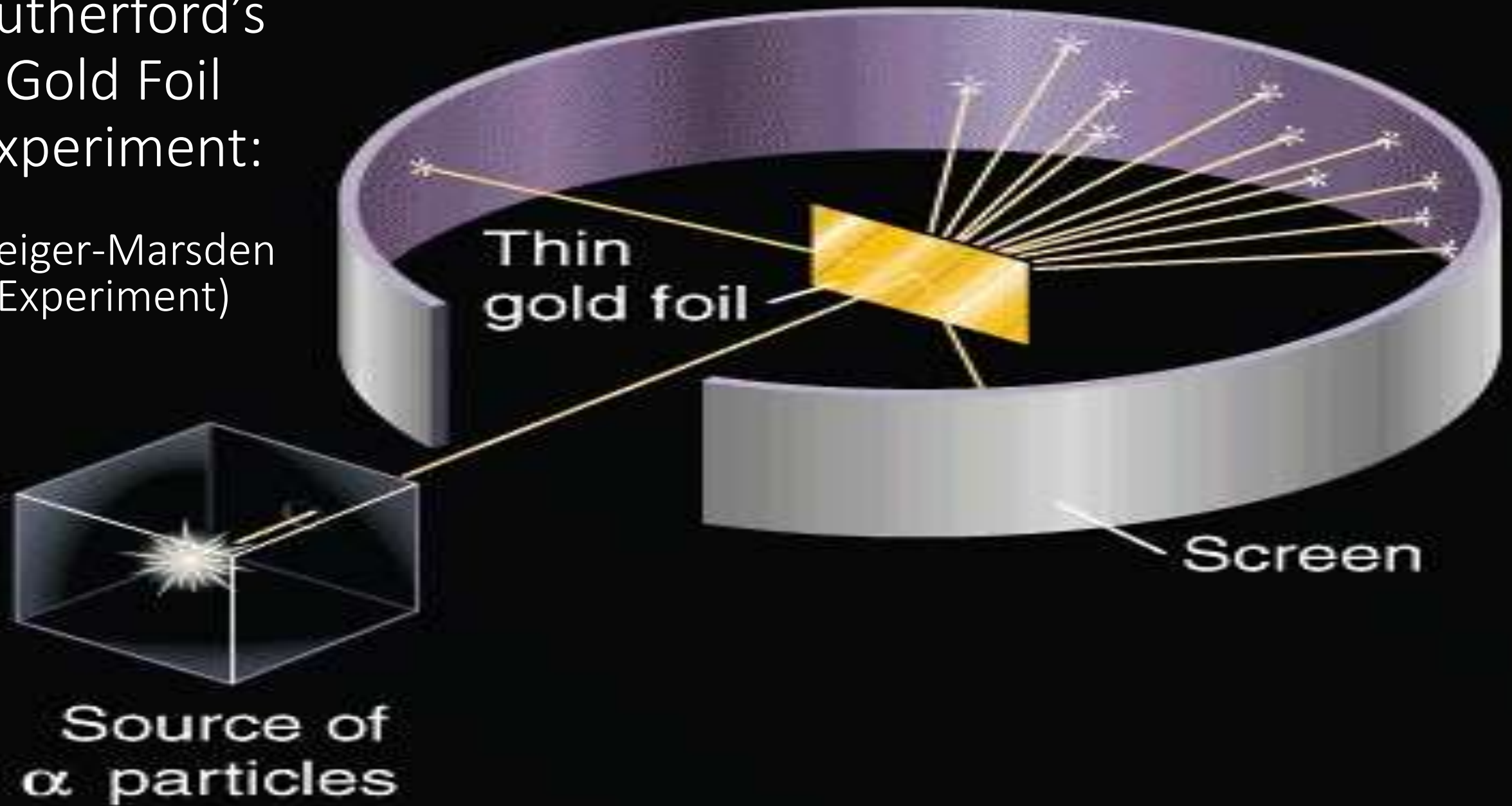


Ernest Marsden



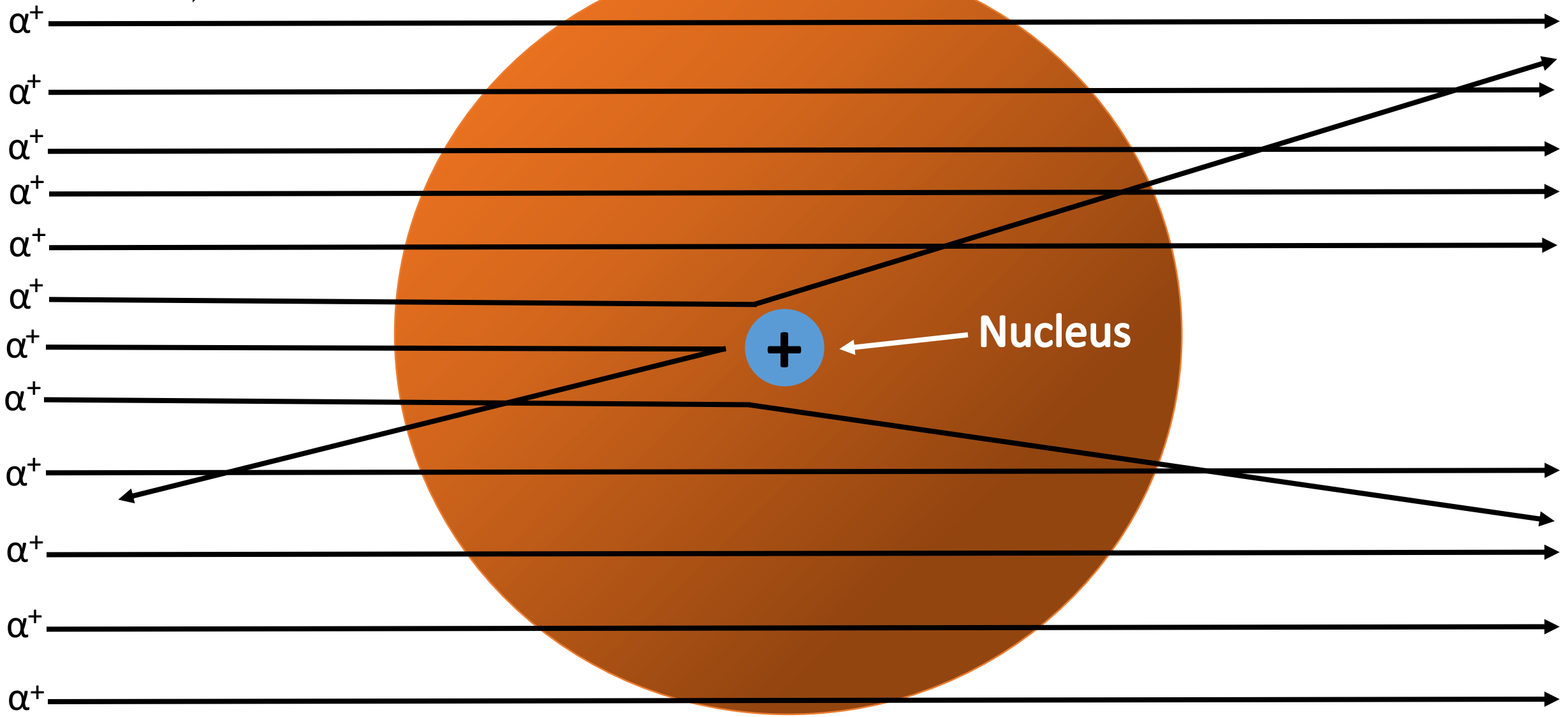
Rutherford's Gold Foil Experiment:

(Geiger-Marsden
Experiment)



α -particles

Gold atom



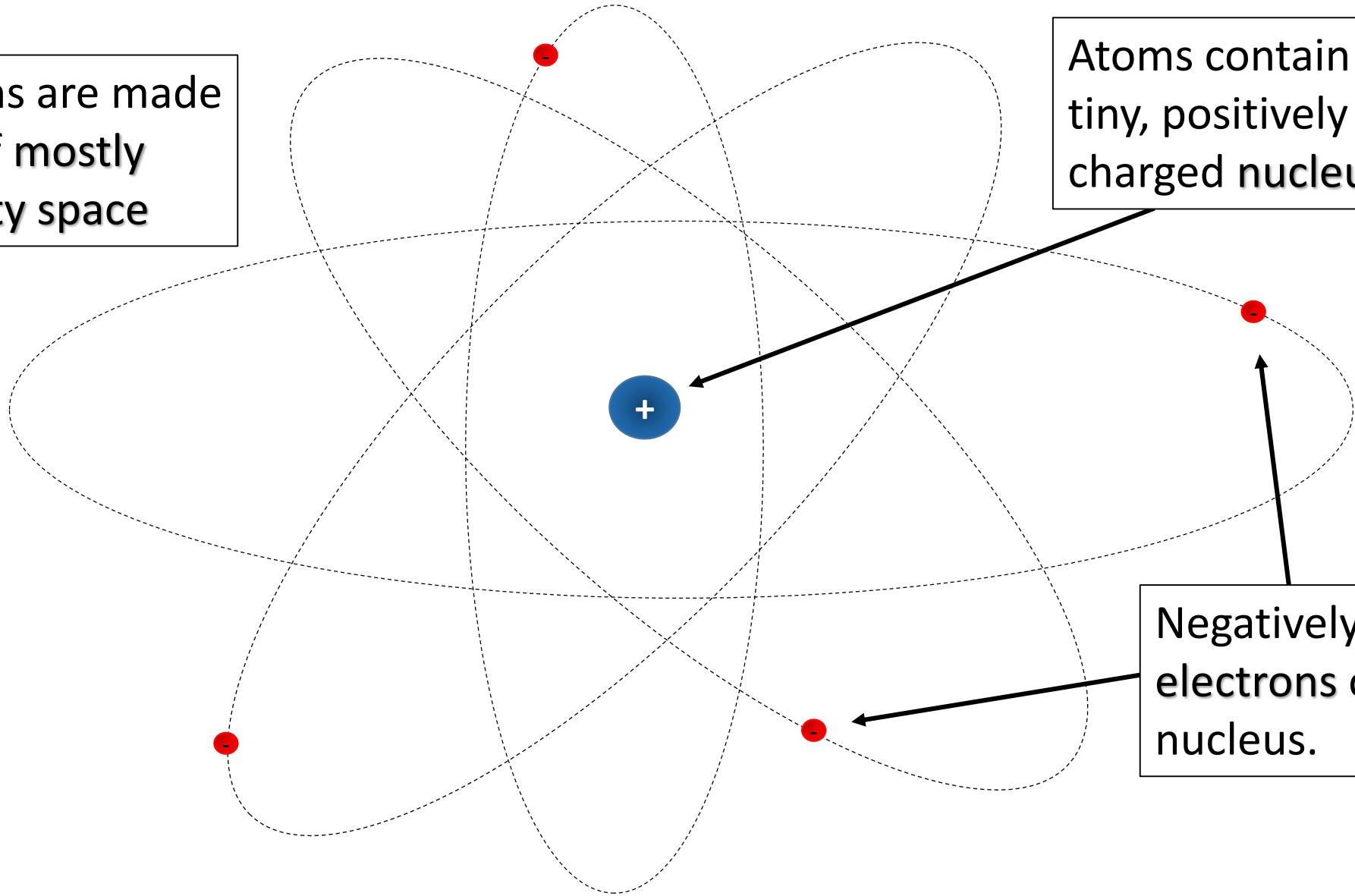
Rutherford's Gold Foil Experiment

- Alpha (α) particles are fired into gold atoms

| Observation | Conclusion |
|---|---|
| <ul style="list-style-type: none">▪ Most of the α-particles pass straight through the gold atoms. | <ul style="list-style-type: none">▪ Most of the atom is made up of empty space. |
| <ul style="list-style-type: none">▪ A few α-particles are deflected, some even reflected, by something inside the atom. | <ul style="list-style-type: none">▪ Atoms contain a tiny, dense, positively charged nucleus. |

Rutherford's Atomic Model:

Atoms are made up of mostly empty space

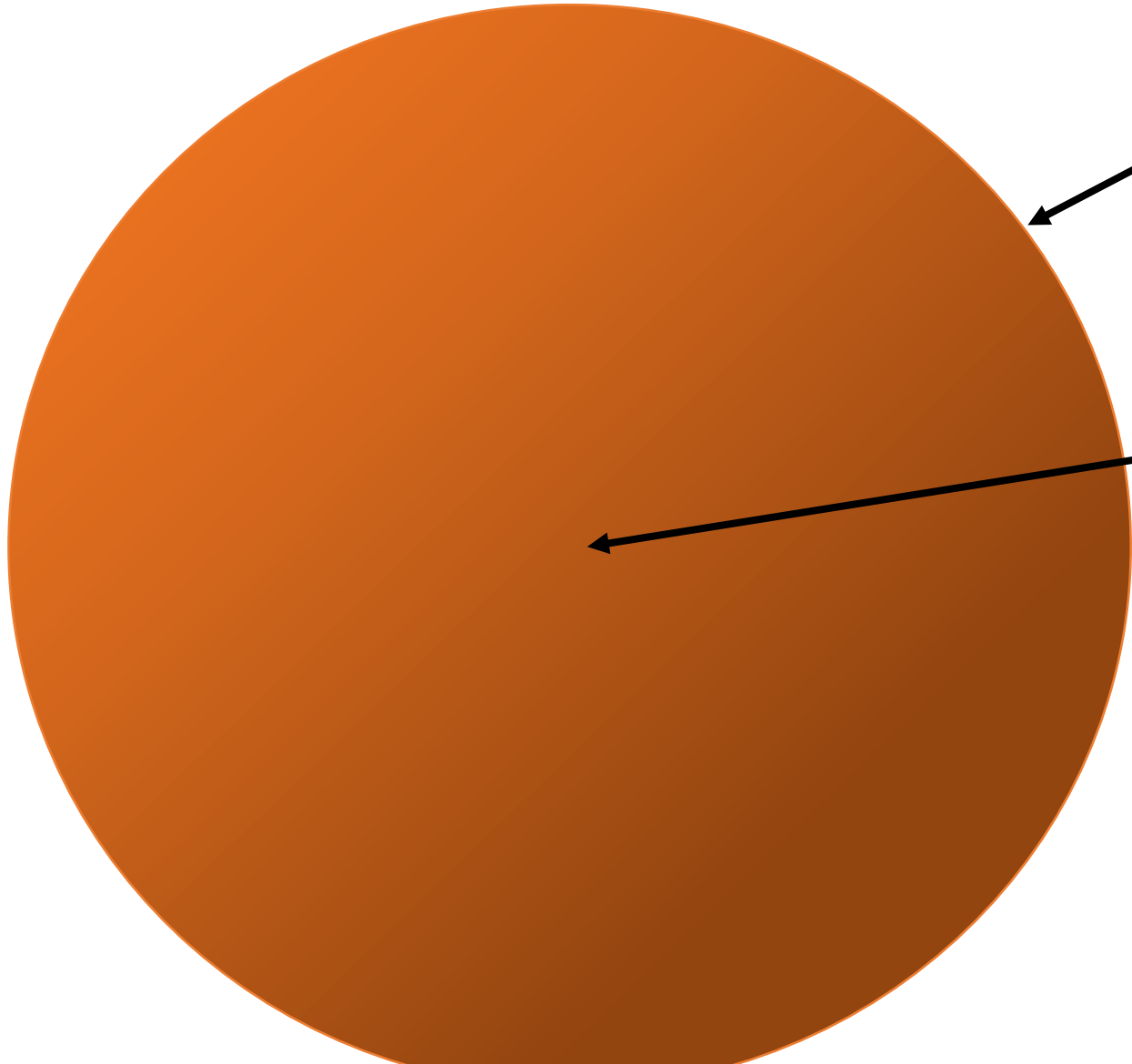


Atoms contain a tiny, positively charged nucleus

The nucleus is made up of protons

Negatively charged electrons orbit the nucleus.

Imagine a gold atom the size of this circle...



Gold Atom

Actual diameter

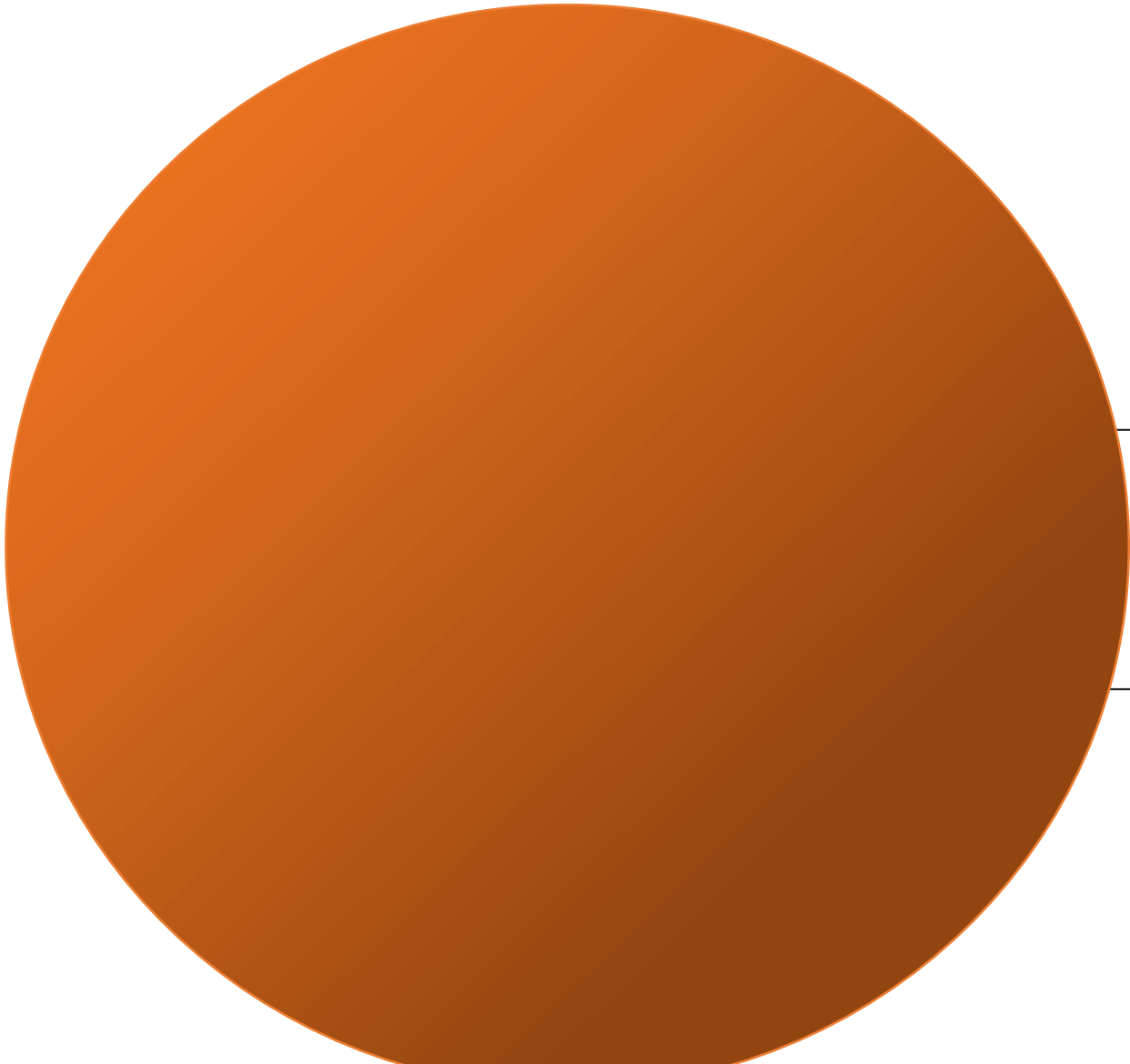
≈ 0.0000000003 cm

Gold Nucleus

Actual diameter

$\approx 0.000000000000026$ cm

Too small to see in this scale



We need a bigger scale
to see the nucleus.

Imagine a gold atom the size of the Olympic Stadium...



Imagine a gold atom the size of the Olympic Stadium...



How large would the nucleus be?



- The nucleus would be about the size of a small fly in the middle of the Olympic Stadium.

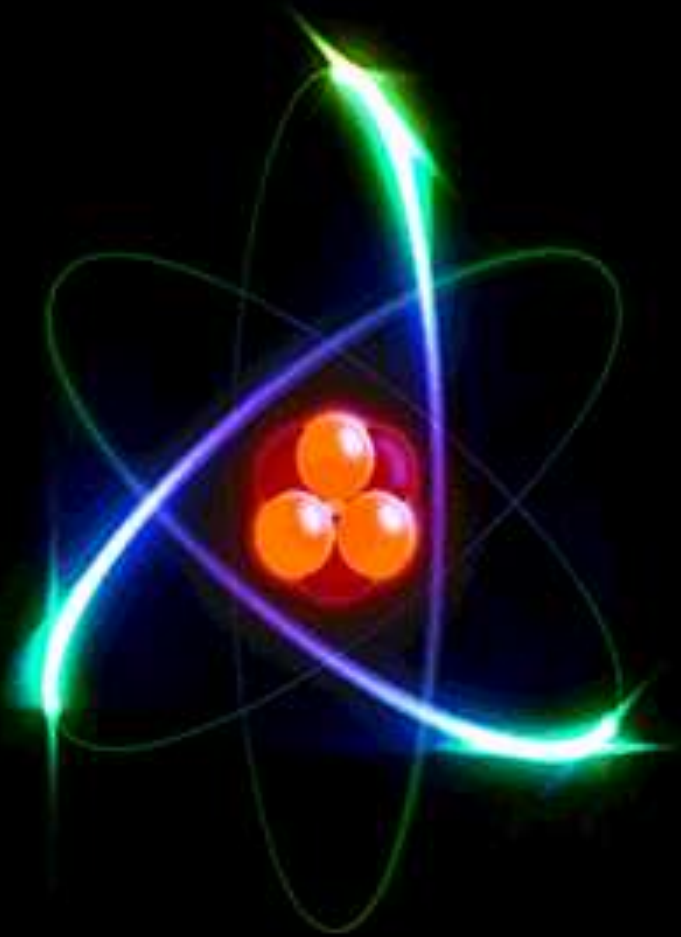


➤ The electrons would be some specks of dust in the stands.



➤ The rest is empty space.





Never trust an atom ...

... they make up
everything.