**Physics 30 – Lesson 27**

**Rutherford’s Model of the Atom**

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1. particles
2. thin gold foil
3. gold atoms
4. The majority go straight through the gold foil. A few are deflected by very large angles.
5. Particles which approach a nucleus head on are reflected straight back. The particles do not touch the nucleus. The (+) charges repel each other.
6. Zinc sulfide glows when struck by a high speed particle. The zinc sulfide acts to indicate where the particles go.
7. The majority of an atom’s volume is empty space.
8. They pass right through the gold foil.
9. They come close to a nucleus and are only slightly repelled.
10. Positive charge nucleus

Mass  nucleus

11.

Orbiting electrons

![NA00119_[1]]()

Very dense, very massive, positive nucleus

* a small nucleus is orbited by electrons

12.

Strengths:

* consistent with the gold foil experiment
* explains how electrons are easily removed
* simple to visualize and understand

Weaknesses:

* how are electrons arranged?
* why do electrons not spiral into the nucleus?
* Electrons are experiencing a centripetal acceleration. Accelerating charged particles radiate EM radiation. No such thing is detected
* How do (+) charges stay together in the nucleus?