



TELECLASS

Lesson: RADIOACTIVITY
Subject: PHYSICS

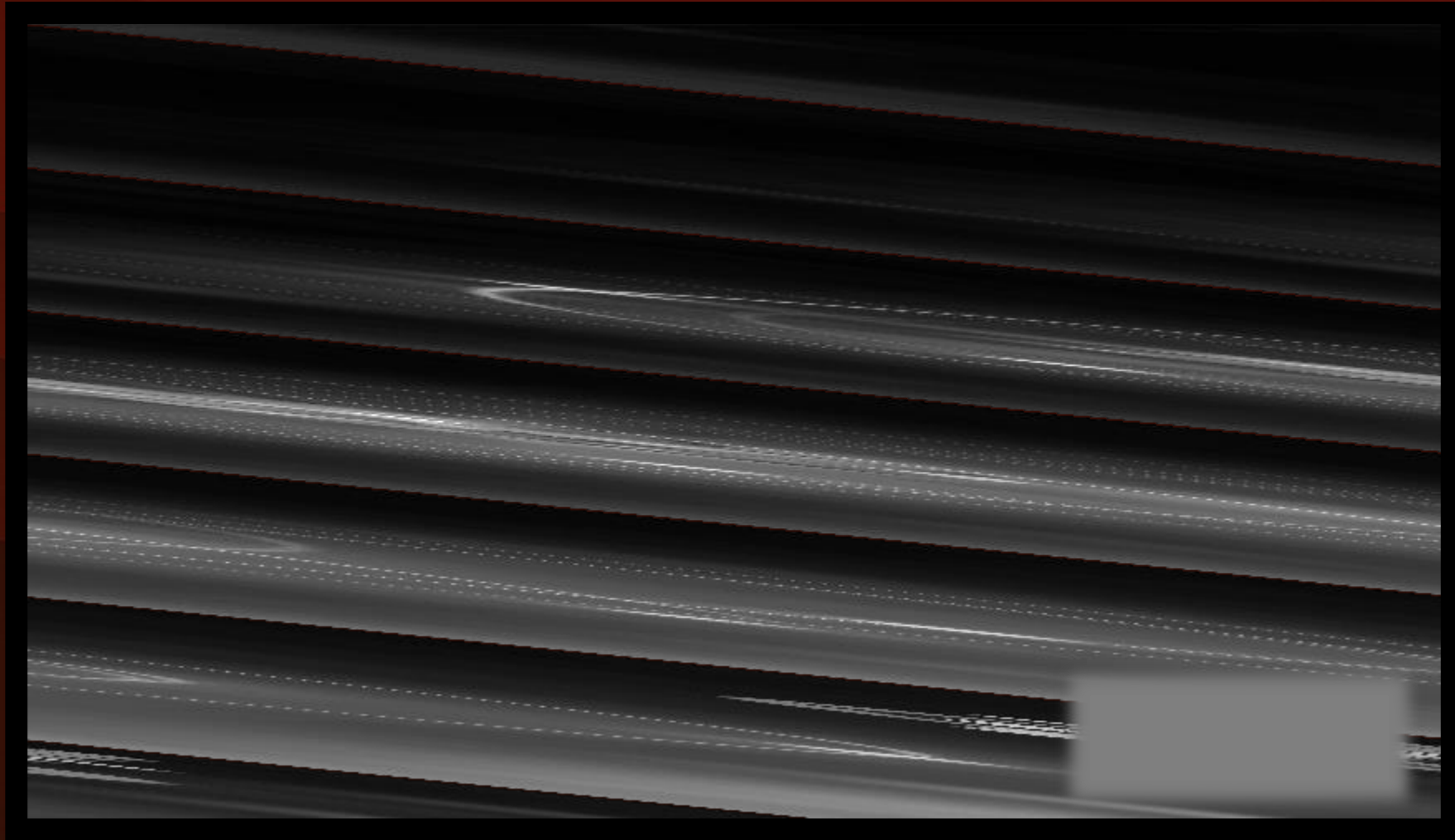
Department of Physics
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Objectives

- Discuss the random nature of radioactive emission
- Identify α , β and γ -emissions by recalling
 - their nature
 - their relative ionising effects
 - their relative penetrating abilities
- Demonstrate understanding of back ground radiation
- Describe the detection of α -particles, β -particles and γ -rays



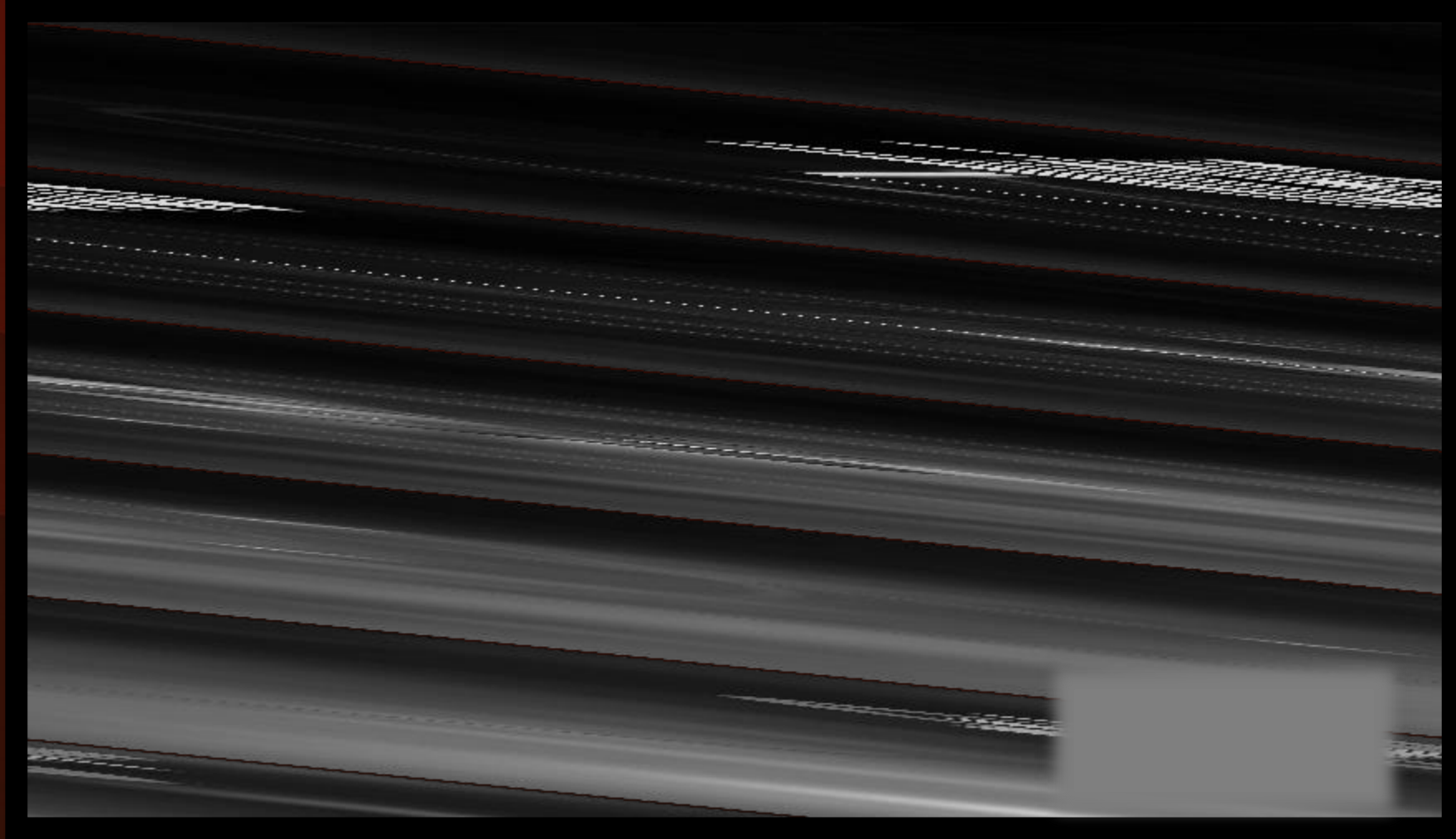
Atoms



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Atoms

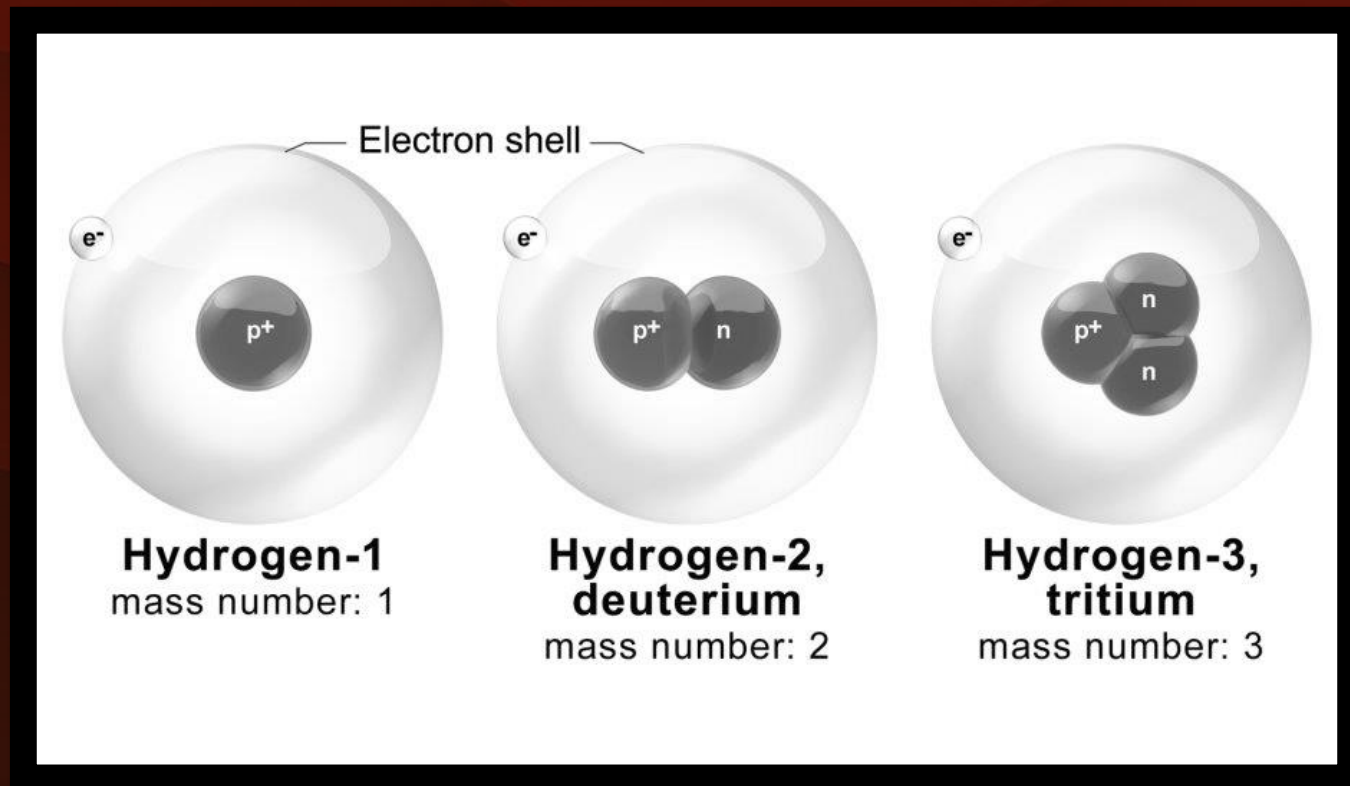


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Isotopes

Atoms of the same element having the same number of atomic number, but different amount of mass number

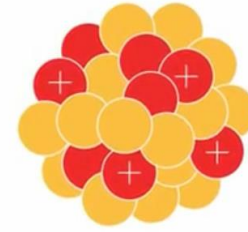


Stable Nucleus



Unstable Nucleus

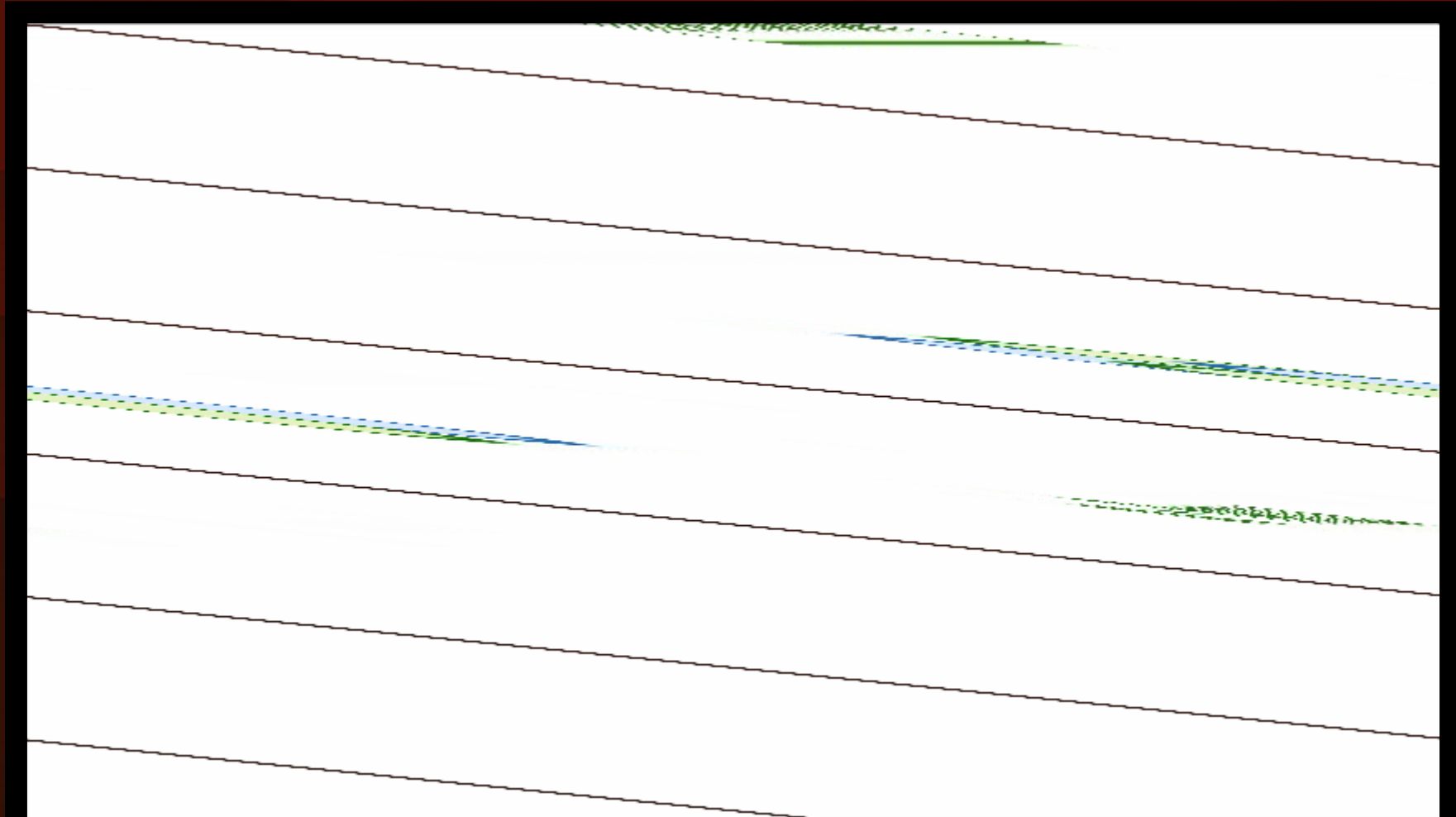
UNSTABLE NUCLEI



Types of Radiation



Properties



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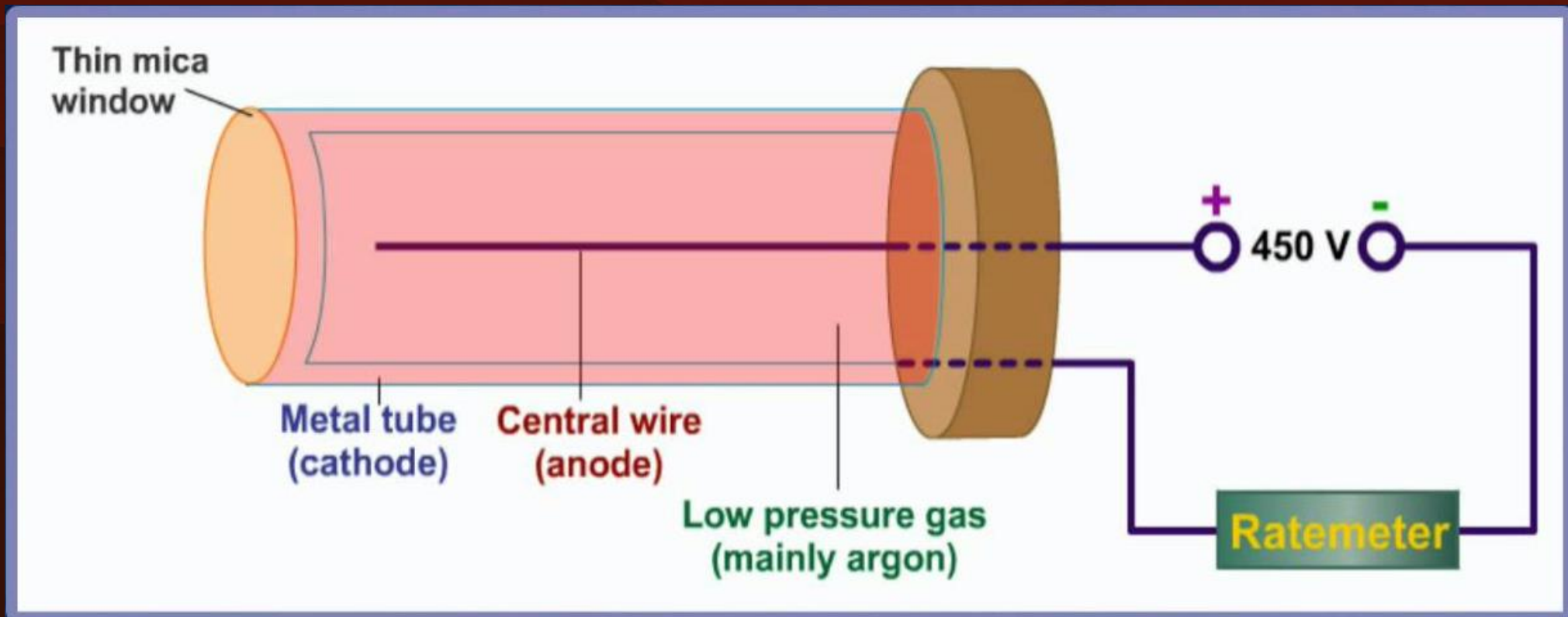
Properties

| Property | Alpha radiation | Beta radiation | Gamma radiation |
|-------------------|---------------------------------|-----------------------------|---------------------------------------|
| Composition | Alpha particle (helium nucleus) | Beta particle (electron) | High-energy electromagnetic radiation |
| Symbol | $\alpha, {}^4_2\text{He}$ | $\beta, {}^0_{-1}\text{e}$ | γ |
| Charge | 2+ | 1- | 0 |
| Penetrating power | Low (0.05 mm body tissue) | Moderate (4 mm body tissue) | Very high (penetrates body easily) |
| Shielding | Paper, clothing | Metal foil | Lead, concrete (incompletely shields) |

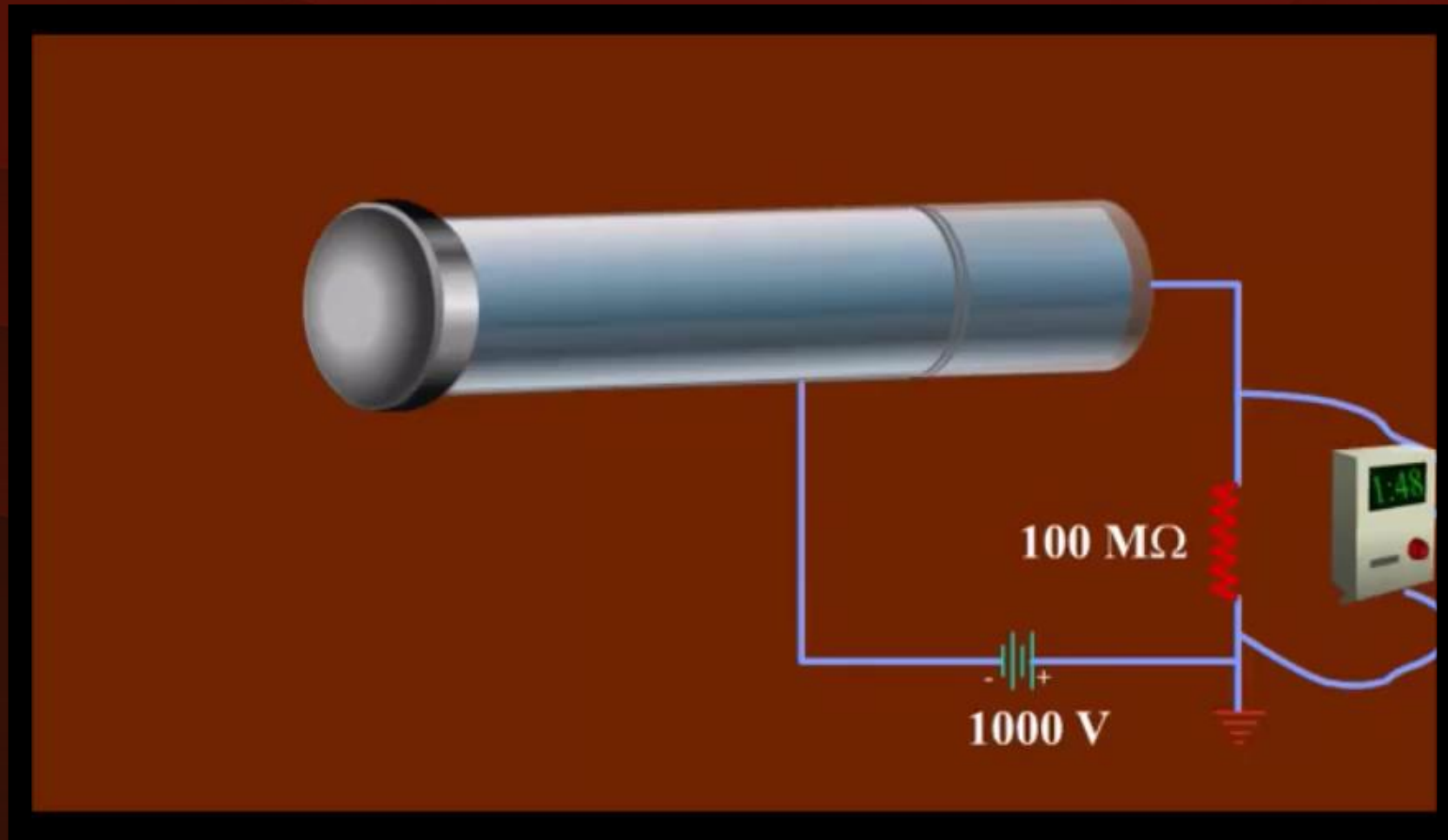


Detection of Radiation

GM Tube



GM Tube



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Background Radiation

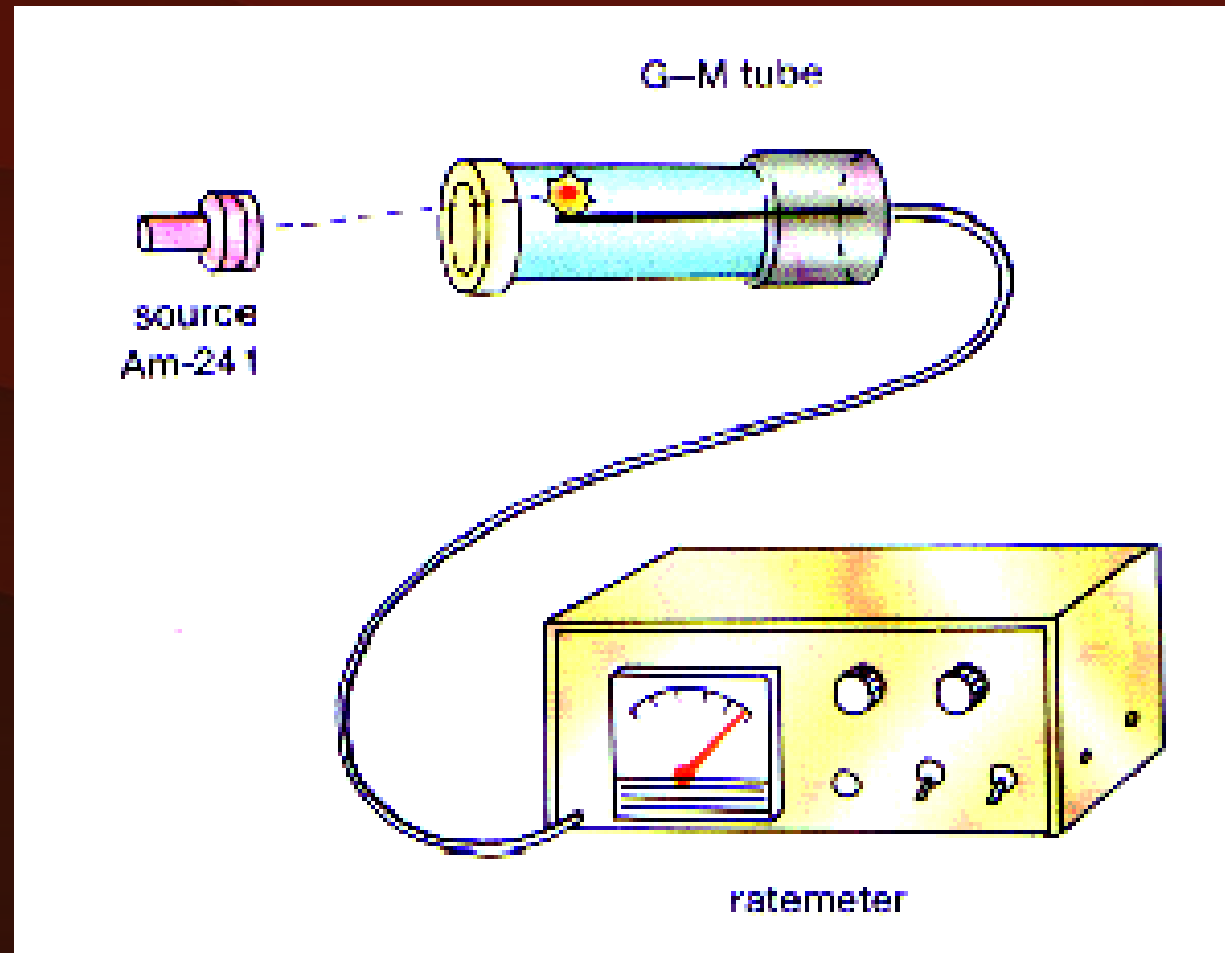
- A measure of the level of ionizing **radiation** present in the environment at a particular location
- The quantity **Activity** gives an indication of how radioactive a substance is.
- Activity is the number of radioactive atoms which disintegrate and emit radioactivity per second.

Sources

- cosmic rays
- rocks and soil
- living things
- nuclear waste



Radiation Detection using GM Tube



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Summary

- How is radiation produced and emitted?
- The type of radiations
- The properties of the radiations
- GM Tube
- Background radiation
- Detecting radiation



Reference

- <https://www.youtube.com/watch?v=UtZw9jflxXM>
- <https://www.youtube.com/watch?v=PlsWy2q0hVc>
- https://www.youtube.com/watch?v=o-3l1JGW-Ck&disable_polymer=true





Thankyou

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