

Gizmo #1: Student Exploration: Nuclear Decay

Directions: Follow the instructions to go through the simulation. Respond to the questions and prompts in the orange boxes.

Vocabulary: alpha particle, atomic number, beta particle, daughter product, gamma ray, isotope, mass number, nuclear decay, positron, radioactive, subatomic particle

Prior Knowledge Questions (Do these BEFORE using the Gizmo.)

The chart below gives the locations, charges, and approximate masses of three **subatomic particles**. The approximate mass of each particle is given in universal mass units (u).

Particle	Location	Charge	Approximate mass
Proton	Nucleus	1^+	1 u
Neutron	Nucleus	0	1 u
Electron	Orbitals	1^-	0 u

1. The **mass number** of an atom is equal to the sum of protons and neutrons in the nucleus. A helium atom has 2 protons and 2 neutrons. What is the mass number of this atom?

4

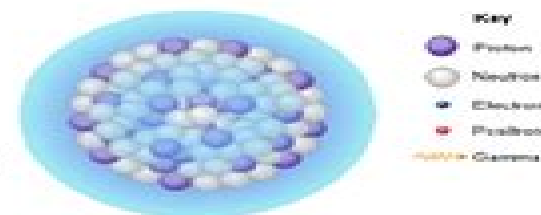
2. The **atomic number** of an element is equal to the number of protons in each atom of the element. All helium atoms have 2 protons. What is the atomic number of helium?

2

Gizmo Warm-up

While most atoms are stable, some are **radioactive**, which means that they have a tendency to undergo spontaneous **nuclear decay**. The decay of radioactive atoms generally results in the emission of particles and/or energy.

Several types of nuclear decay can be explored with the *Nuclear Decay* Gizmo. On the Gizmo, check that **Alpha decay** and **Uranium** are selected.



1. Click **Play** (▶), and then click **Pause** (⏸) when the **alpha particle** is clearly visible. What is an alpha particle made of? Protons and neutrons
2. Click **Play** and observe. Besides the alpha particle, what else is emitted from the nucleus during alpha decay? Gamma

Gamma rays are energetic electromagnetic waves; they are often emitted in nuclear decay.

Gizmo Student Exploration Nuclear Decay

Chris Ferrie



Gizmo Student Exploration Nuclear Decay:

Nuclear Decay D. Russell Humphreys, Institute for Creation Research, 2002 Let's Get Glowing! Chris Ferrie, 2020

Red Kangaroo notices a radioactive sign and knows she's supposed to stay away. Anything with radioactivity is bad for you, right? Dr. Chris surprises Red Kangaroo when he tells her everything in the world is radioactive, even us. Jump into the latest book from the #1 science author for kids and learn all about the physics of radioactivity and radioactive decay. In this new series, Chris Ferrie answers all the questions Red Kangaroo has for him about what things are made of and how things work using real-world and practical examples. Young readers will have a firm grasp of scientific and mathematical concepts to help answer many of the "why" questions they may have. *Miss Pickerell and the Geiger Counter* Ellen MacGregor, 2021-12-24

This fun story features Miss Pickerell as she heads off to Washington with her twin nephews to the city to visit the state fair. On her way, she meets a uranium prospector and takes over his hunt for uranium. It's a fun way to learn science for children. The writer has infused the work with information on atomic energy, radioactive decay, cosmic ray background radiation, radio carbon dating, and much more.

Reviewing **Gizmo Student Exploration Nuclear Decay**: Unlocking the Spellbinding Force of Linguistics

In a fast-paced world fueled by information and interconnectivity, the spellbinding force of linguistics has acquired newfound prominence. Its capacity to evoke emotions, stimulate contemplation, and stimulate metamorphosis is truly astonishing. Within the pages of "**Gizmo Student Exploration Nuclear Decay**," an enthralling opus penned by a highly acclaimed wordsmith, readers set about an immersive expedition to unravel the intricate significance of language and its indelible imprint on our lives. Throughout this assessment, we shall delve to the book is central motifs, appraise its distinctive narrative style, and gauge its overarching influence on the minds of its readers.

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Gizmo Student Exploration Nuclear Decay Introduction

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