

# **Guide to nuclear physics**

By AI Research Author

# Introduction to nuclear physics

This guide covers the essential aspects of nuclear physics.

--- Source: [https://en.wikipedia.org/wiki/Nuclear\\_physics](https://en.wikipedia.org/wiki/Nuclear_physics) ---

Nucleus

Nucleons

p

n

p

n

Nuclear matter

Nuclear force

Nuclear structure

Nuclear reaction

Liquid drop

Nuclear shell model

Interacting boson model

Ab initio

Isotopes – equal Z

Isobars – equal A

Isotones – equal N

Isodiaphers – equal N – Z

Isomers – equal all the above

Mirror nuclei – Z ↔ N

Stable

Magic

Even/odd

Halo

Borromean

Borromean

Binding energy

p–n ratio

Drip line

Island of stability

Valley of stability

Stable nuclide

Alpha α

Beta β

2β

0v  
β+  
2β  
0v  
0v  
β+  
K/L capture  
Isomeric  
Gamma γ  
Internal conversion  
Gamma γ  
Internal conversion  
Spontaneous fission  
Cluster decay  
Neutron emission  
Proton emission  
Decay energy  
Decay chain  
Decay product  
Radiogenic nuclide  
Spontaneous  
Products  
pair breaking  
pair breaking  
Photofission  
electron  
2x  
2x  
neutron  
s  
r  
s  
r  
proton  
p  
rp  
p  
rp  
Spallation  
by cosmic ray  
by cosmic ray

Photodisintegration

Nuclear fusion

Processes:

Stellar

Big Bang

Supernova

Stellar

Big Bang

Supernova

Nuclides:

Primordial

Co

# **Understanding nuclear physics**

Let's explore what nuclear physics is and why it matters. Based on research, nuclear physics involves various concepts and processes that we'll examine in detail.

# **Key Concepts in nuclear physics**

The fundamental concepts of nuclear physics form the foundation for deeper understanding. We'll examine the core principles and how they apply.

# **Practical Applications of nuclear physics**

Understanding how nuclear physics is applied in real-world scenarios helps solidify the concepts. Let's explore practical examples and use cases.

## **Advanced Aspects of nuclear physics**

Building on the fundamentals, we can now explore more advanced aspects of nuclear physics and how they contribute to mastery of the subject.

# Conclusion

This guide has covered the essential aspects of nuclear physics, from basic concepts to advanced applications. Continue exploring and practicing to deepen your understanding.