CHEMICAL PHYSICS

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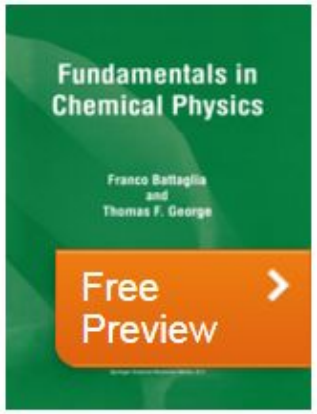
INTRODUCTION

The fundamental program of **chemical physics** consists in understanding ***chemical phenomena*** in terms of the most fundamental ***laws of physics***.

Chemical physics is a science on its own. Its main concern is chemistry, whose phenomena it wishes to describe using the language of physics and mathematics.



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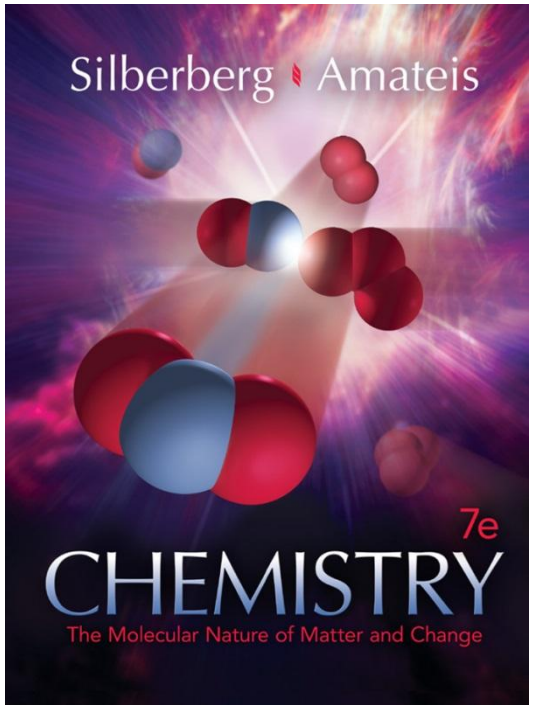
Fundamentals in Chemical Physics

Authors: **Battaglia**, F., **George**, T.F.

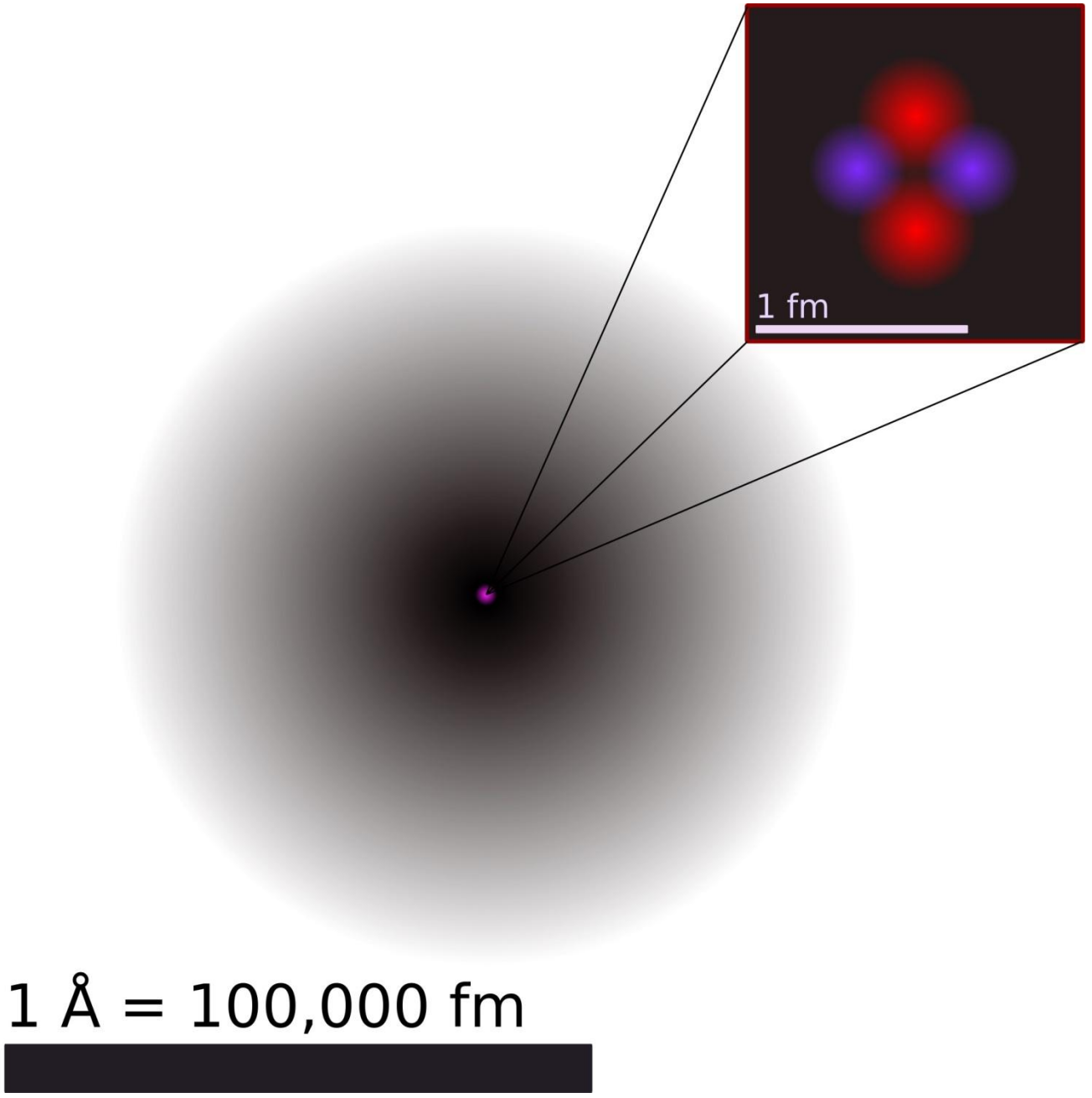
INTRODUCTION

Chemistry is *the study of matter and its properties, the changes that matter undergoes, and the energy associated with those changes.*

Matter is the "stuff" of the universe: air, glass, planets, students — *anything that has mass and volume.* Chemists want to know the **composition** of matter, *the types and amounts of simpler substances that make it up.* A *substance* is a type of matter that has a defined, fixed composition.



CHAPTER I: ATOMIC STRUCTURE



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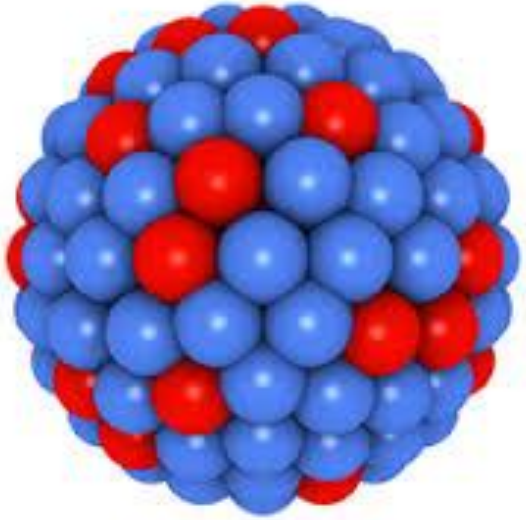

$_{92}U$

p => Z => N

$_{2}He$

He^{0} He^{0} He^{0}

$$_{2}He$$

$$He^{0} \quad He^{+} \quad He^{0}$$

$$_{2}He$$

$$He^{0} \quad He^{+} \quad He^{++}$$

$$_{2}He$$

$$He^{0} \quad He^{+} \quad He^{++}$$

Chemical Element: Species of Equicharged Atomic Nuclei

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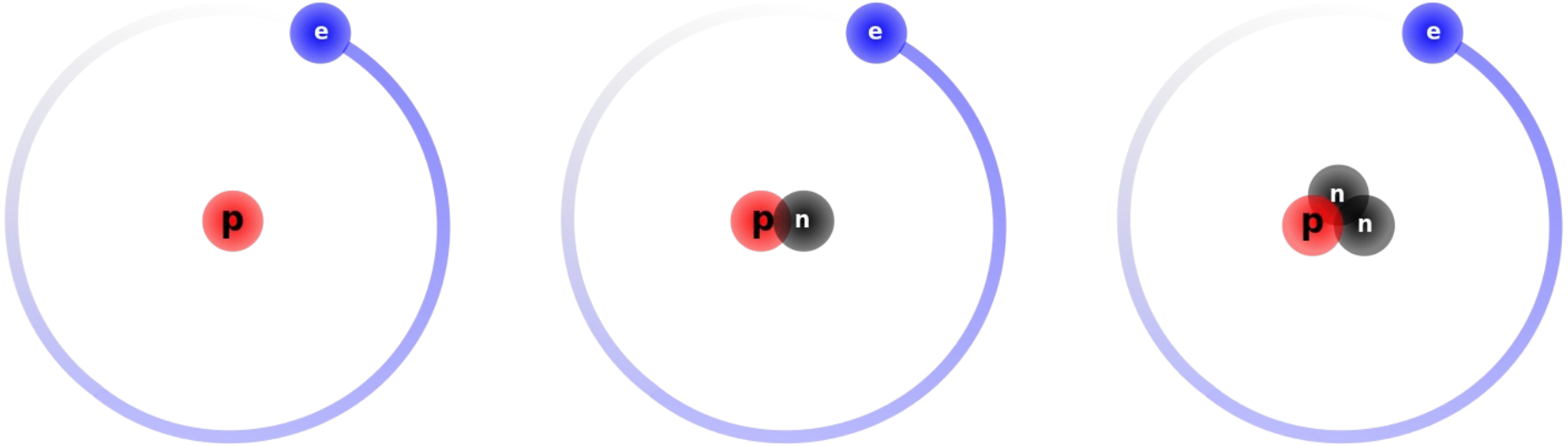

$^{1}_{1}H$ $^{2}_{1}H$ $^{3}_{1}H$

Protium **Deuterium** **Tritium**

Isotopes of Chemical Element: Chemical Element Representatives with different mass number

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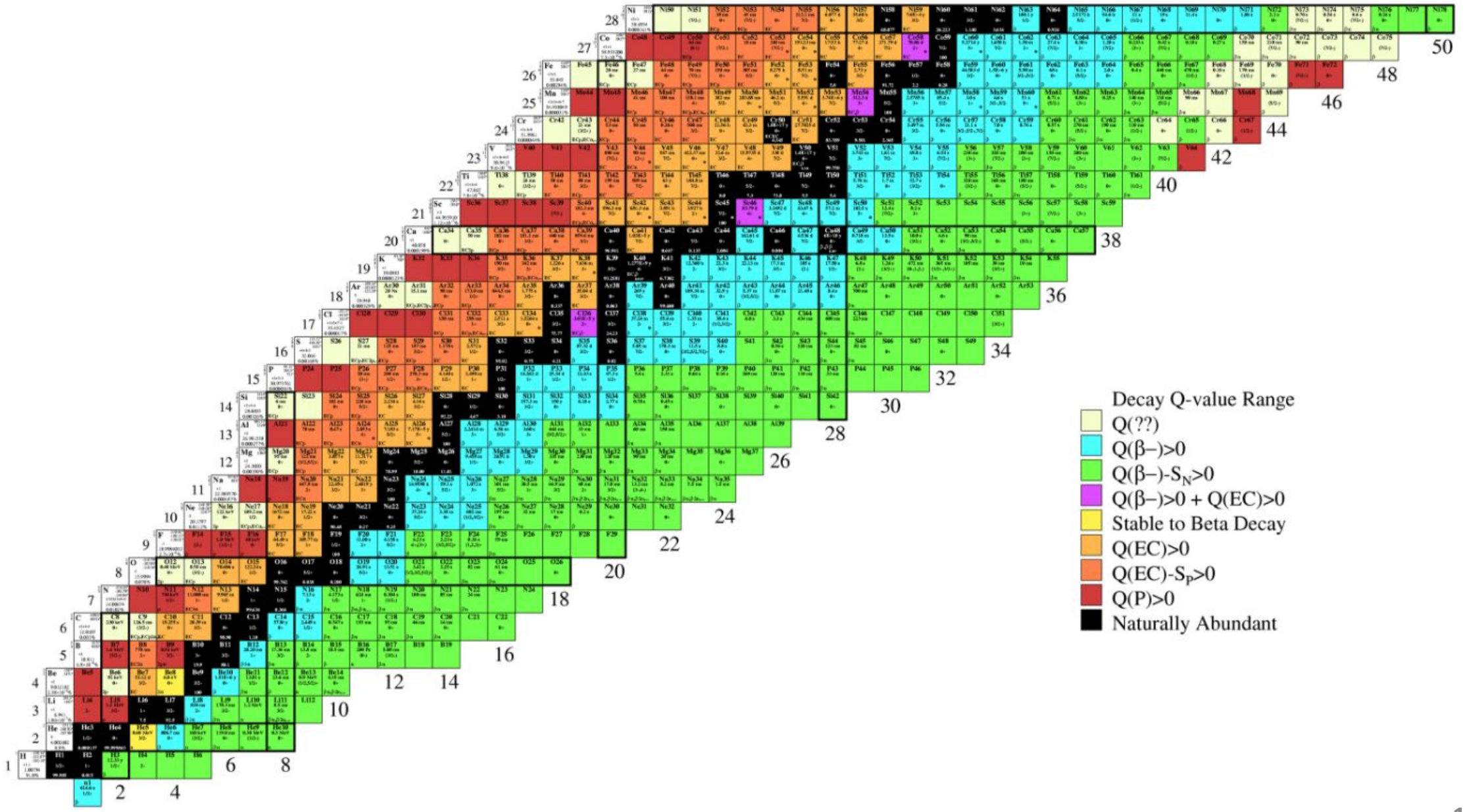
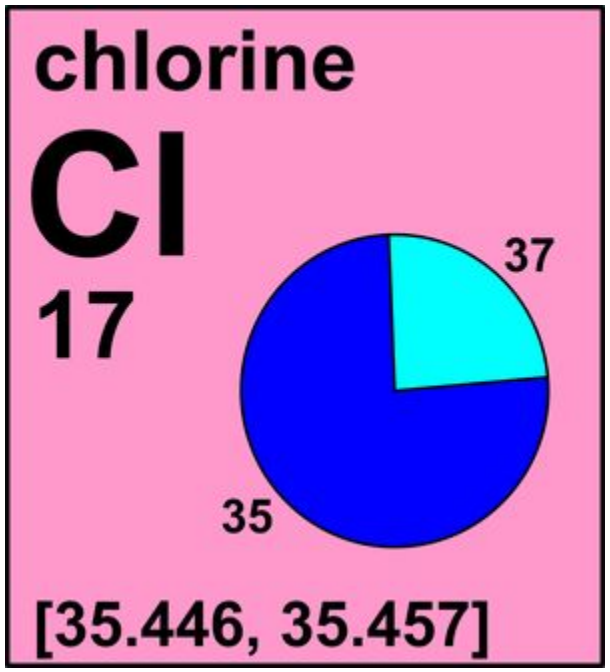
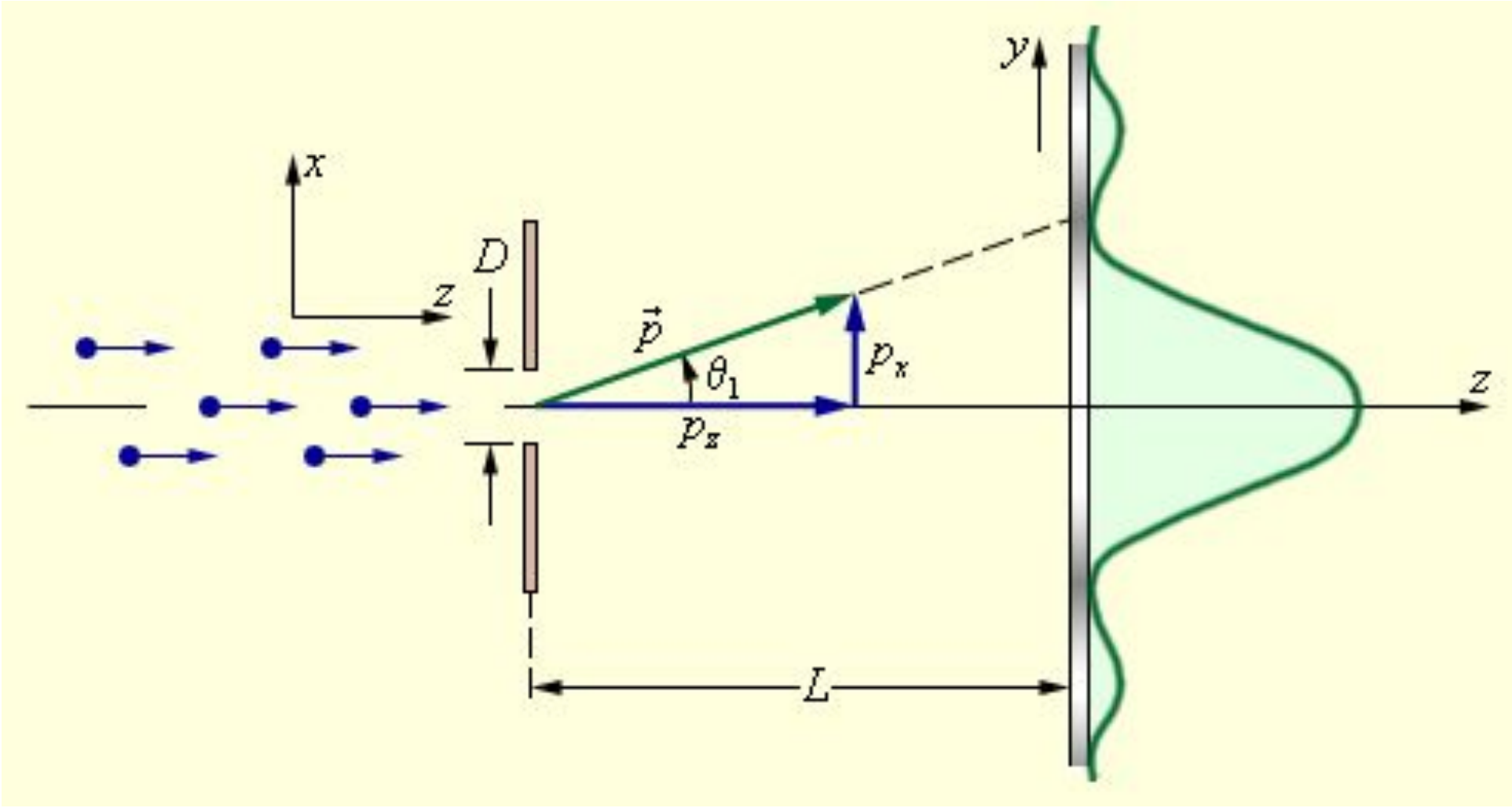




Pie Chart

35·0.7576 + 37·0.2424 = 35.453 [a.m.u]

Isotopic Abundance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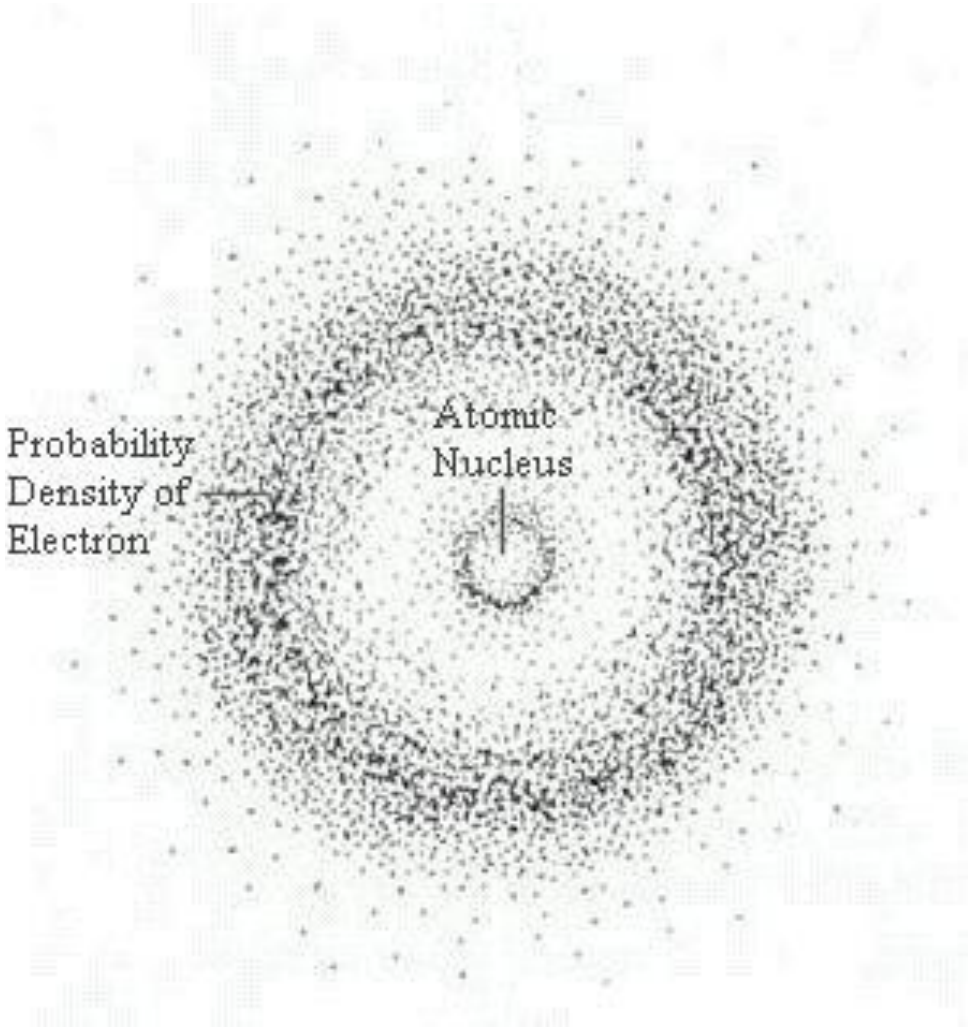

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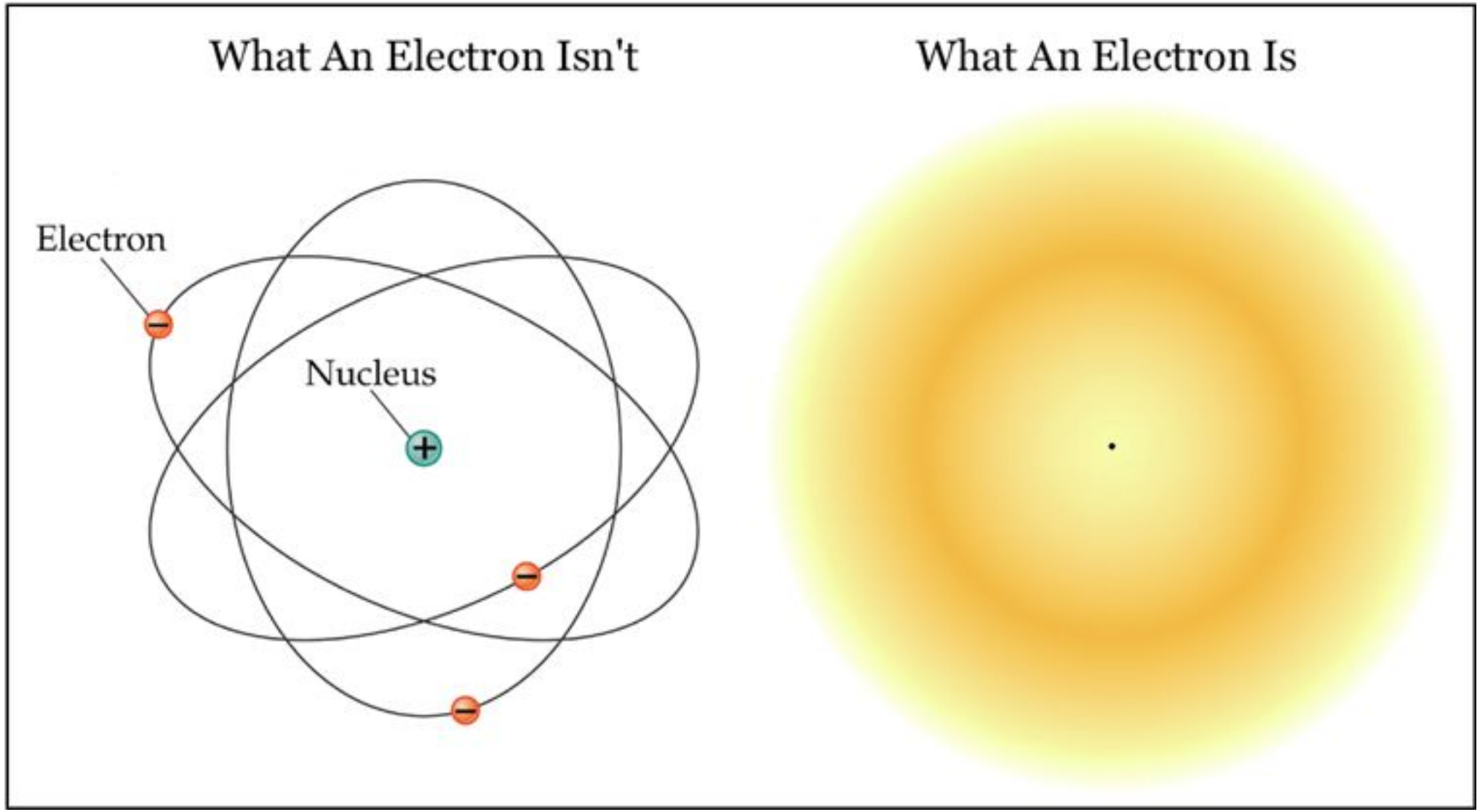

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