

Physics & Astronomy
Speaker Series

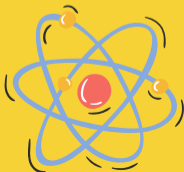
Bryce Gadway
Professor of Physics
Penn State University

“Exploring ordering and synchronization with
atoms and oscillators”

Join us on Thursday
April 24th at Noon
In OLIN 268



Pizza will be served



Fundamental Forces

Force	Strength	Major Role	Messenger
Strong	1	Holds nuclei together	gluons
Electromagnetic	10^{-2}	Holds atoms together	photons
Weak	10^{-12}	Radioactive decay	W^+ , W^- , Z^0
Gravitation	10^{-35}	Galaxy, star, and planet formation	graviton?

Lecture 23 — Concept Test 1

In the vertex diagram at right, a positron emits a W^+ . What is the particle that recoils from the interaction?

1. e^+

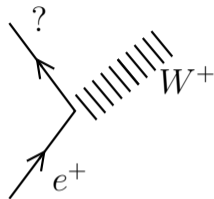
3. W^-

5. ν_e

2. e^-

4. Z^0

6. $\bar{\nu}_e$



Lecture 23 — Concept Test 2

A blue down quark (Bd) emits a gluon and becomes a green down quark (Gd). What are the colors of the gluon?

1. BG

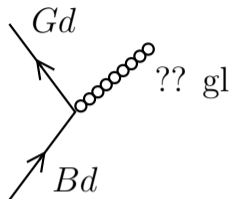
3. $\bar{G}B$

5. BB

2. $\bar{B}G$

4. $\bar{B}\bar{G}$

6. GG



Lecture 23 — Concept Test 3

Below are vertex diagrams showing possible interactions between particles and messenger particles. Which of the following interactions is/are not allowed?

