Opening up Assessment: Open Tools and Item Banks

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OPEN ASSESSMENTS

HOME CONTACT API THE CODE ABOUT SIGN IN SIGN UP

POP THE QUESTION ANYWHERE

PLAN, CREATE AND SHARE QUESTIONS SIMPLY. EASILY EMBED ASSESSMENTS ON ANY PAGE ON ANY WEBSITE.

EXAMPLE ASSESSMENT >

Content and Assessment are Separate

OER Content

Videos
Lectures
Textbooks
Webpages
Assessments

Current State of OER Assessments

PDF Files
Static
Contained in
Separate Quiz
& Test Systems

The Challenge

The Potential?

- **Do for assessments and items, what's been done for content (whole courses, lectures, videos)**
- **Embed Anywhere**
- **Share**
  - Don't reinvent the wheel for every course
- **Evaluate, Record and Track Responses**
  - Scale ➔ More use of items/assessments for validity
  - May lead to evidence of impact?

Focus: Formative Assessment

- Putting mechanisms for students to **check their understanding** / mastery of concepts directly in course materials

- Primarily for **formative** (self-check, understanding) not summative (exams or formal assignments)

What’s done today in OER with embedded formative assessment?

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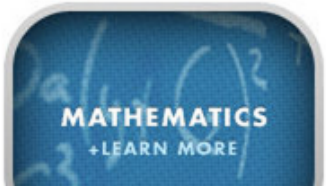

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Resource Center

- Readings
- Assessments
- Web Media
- Final Exam
- Activities

EXPAND ALL

Assessments

- 1.1.4 Assessment: Washington State Board for Community and Technical Colleges' MyOpenMath: "Section 5.1: Circles Graded Homework"
- 1.2.5 Assessment: Washington State Board for Community and Technical Colleges' MyOpenMath: "Section 5.2: Angles Graded Homework"
- 1.2.5 Assessment: Washington State Board for Community and Technical Colleges' "Chapter 5 Quiz 1"

  Link: Washington State Board for Community and Technical Colleges' "Chapter 5 Quiz 1" (PDF)

  Instructions: This assessment covers subunits 1.1.and 1.2. Complete this quiz after you have worked through the readings, web media, and assignments for subunits 1.1 and 1.2.

  See a broken link? Please let us know!
- 1.3.4 Assessment: Washington State Board for Community and Technical Colleges' MyOpenMath: "Section 5.3: Points on Circles using Sine and Cosine Graded Homework"
- 1.3.4 Assessment: Washington State Board for Community and Technical Colleges' "Chapter 5 Quiz 2"

Quiz #1a **NAME**_____

5.1, 5.2 Lippman/Rasmussen

Answers without proper justification may not receive full credit. Show your work algebraically.

1) Write an equation for a circle with diameter 20 centered at the point (-2, 4)

2) Find the point in the first quadrant where the line $y = 2x$ intersects a circle of radius 3 centered at the origin.

3) Convert 160 degrees to radians. Give an exact answer.

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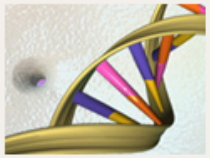
- Economics
- Electrical Engineering and Computer Science
- Mathematics
- Mechanical Engineering
- Physics

Biology

Fundamentals of Biology



Fundamentals of Biology focuses on the basic principles of biochemistry, molecular biology, genetics, and recombinant DNA. These principles are necessary to understanding the basic mechanisms of life and anchor the biological knowledge that is required to understand many of the challenges in everyday life, from human health and disease to loss of biodiversity and environmental quality.

Instructors: Prof. Eric Lander, Prof. Robert Weinberg, Prof. Tyler Jacks, Prof. Hazel Sive, Prof. Graham Walker, Prof. Sallie Chisholm, Dr. Michelle Mischke

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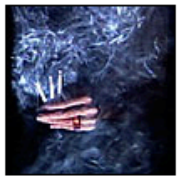
Lecture 14: Generating EM Waves, Energy, Scattering

Lecture Topics



- Poynting Vector
- Solar Constant
- Emission and Scattering of EM Waves

Learning Objectives

By the end of this lecture, you should:

- relate E and B fields to the Poynting vector.
- know the solar constant and why it does not correspond simply to an E field.
- describe in general terms the derivation of the Larmor formula.
- describe antenna emission and Rayleigh scattering (including polarization).

Lecture Activities

- Watch the Lecture 14 video with Professor Lewin (01:17:16)
- Read the accompanying Lecture 14 viewing notes (PDF)
- Also available: Lecture 14 video transcript (PDF)

Check Yourself

- Contrast the energy conversion that was demonstrated in the lectures, in which a light bulb was lit through EM wave energy being received in an antenna, with what has to be done to collect solar energy that has a Poynting vector in principle corresponding to an electric field of 1000 V/m.

  › *View/hide answer*

  As one of the demonstrations showed, the EM radiation is highly polarized. If the antenna is in the plane of polarization, there is in principle direct acceleration of electrons in the wire of the antenna, and this could be fairly efficient at GHz or less frequencies. By contrast, the polarization in solar energy is random, so one could not align an antenna with it. Further, at the high frequency of light, antennas are not effective and absorption of energy involves molecules and atoms, so getting a current flowing is not as simple as in an antenna. If solar energy conversion was easy, the relatively large power density would have motivated us to have it long ago.

EXAM 1

MEMORY I

⊞ MEMORY II: AMNESIA AND MEMORY SYSTEMS

⊞ LANGUAGE

THINKING

⊞ INTELLIGENCE

⊞ EMOTION & MOTIVATION

EXAM 2

⊞ PERSONALITY

⊞ CHILD DEVELOPMENT

⊞ ADULT DEVELOPMENT

⊞ STRESS

PSYCHOPATHOLOGY I

Check Yourself

Multiple Choice Questions

Question 1 of 3

Which of the following characteristics of experimental design ensure causation when done correctly?

A. ○ Dividing people into two or more conditions through random assignment.

B. ○ Doing a statistical analysis of the data.

C. ○ Being sure to have both a dependent and independent variables.

D. ○ Making sure that all participants are identical.

Check Next

Short Essay

When conducting psychological research there are three main research designs that researchers use. All three research designs can collect, analyze and interpret data, but each have important differences. Name and describe each of the three research designs. Describe the advantages and disadvantages of each design. Give a research example of each design.

› *Sample Answer*

The three research designs are **descriptive research**, **correlational research**, and **experimental research**.

Descriptive research provides a description or snapshot of the current state of affairs or some phenomenon in order to understand the nature of that phenomenon. Advantages of descriptive research is that it provides a complete picture of the situation and is often real world or events that are naturally occurring. Disadvantages are that there is no statistical relationship, beyond anecdotal evidence, that are studied; causal influence cannot be inferred, and it is difficult to determine which variables are influential in the study due to the inability to repeatedly measure all of the variables and to even know what all of the variables are.

Correlational research tests relationship between two or more variables. Advantages of correlational research are statistical tests to show the relationship is unlikely to occur due to chance, the ability to make predictions about future outcomes, and it can be used to assess real-world events. The main disadvantage is that no causal relationship can be inferred from the relationship of the variables.

Experimental research is used to asses the causal relationship between two or more variables by manipulating independent variables and testing the causal impact on a dependent variable. While it is more difficult to assess real-world events, experimental research has all of the other advantages of correlational research in addition to the ability for causal inference. Disadvantages are the difficulty to manipulate important variables or many variables at one time and the cost of conducting experiments.

ROTATION AND TRANSLATION

CENTRAL FORCE MOTION

DOWNLOAD COURSE MATERIALS

» Clip 1: Angular Momentum of a Particle (8 min)
» Transcript (PDF)

From Lecture 20 of *8.01 Classical Mechanics, Fall 1999*

» Clip 2: Rate of Change of Angular Momentum (4 min)
» Transcript (PDF)

From Lecture 20 of *8.01 Classical Mechanics, Fall 1999*

Download the complete lectures from this course:

» iTunes U
» Internet Archive

Learning Activities

Guided Activities

Read through the class slides carefully. They explain all of the concepts from the module.

Slides: Angular Momentum (PDF - 1.3MB)

Self-Assessment

Do the Concept Questions first to make sure you understand the main concepts from this module. Then, when you are ready, try the Challenge Problems. If you are struggling with the Challenge Problems, watch the Homework Help Session videos, which will give you tips on how to tackle problems of this type.

Concept Questions

Concept Questions (PDF)

Solutions (PDF)

Challenge Problems

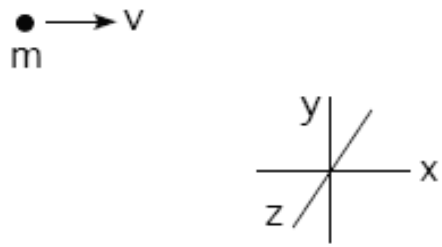
Challenge Problems (PDF)

Solutions (PDF)

Angular Momentum

Concept Questions

Question 1: Angular Momentum



In the above situation where a particle is moving in the x-y plane with a constant velocity, the magnitude of the angular momentum $\left|\vec{\mathbf{L}}_0\right|$ about the origin

1. decreases then increases,
2. increases then decrease,
3. is constant,
4. is zero because this is not circular motion.

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bmuramatsu

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bmuramatsu

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Brandon Muramatsu

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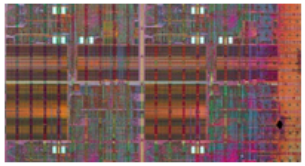

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Courseware | Course Info | Textbook | Discussion | Wiki | Progress

- Overview
- Week 1
- Week 2
- Week 3
- Week 4
- Week 5

MOSFETs: Large Signals
Lecture Sequence

MOSFET Amplifiers: Small signal model
Lecture Sequence

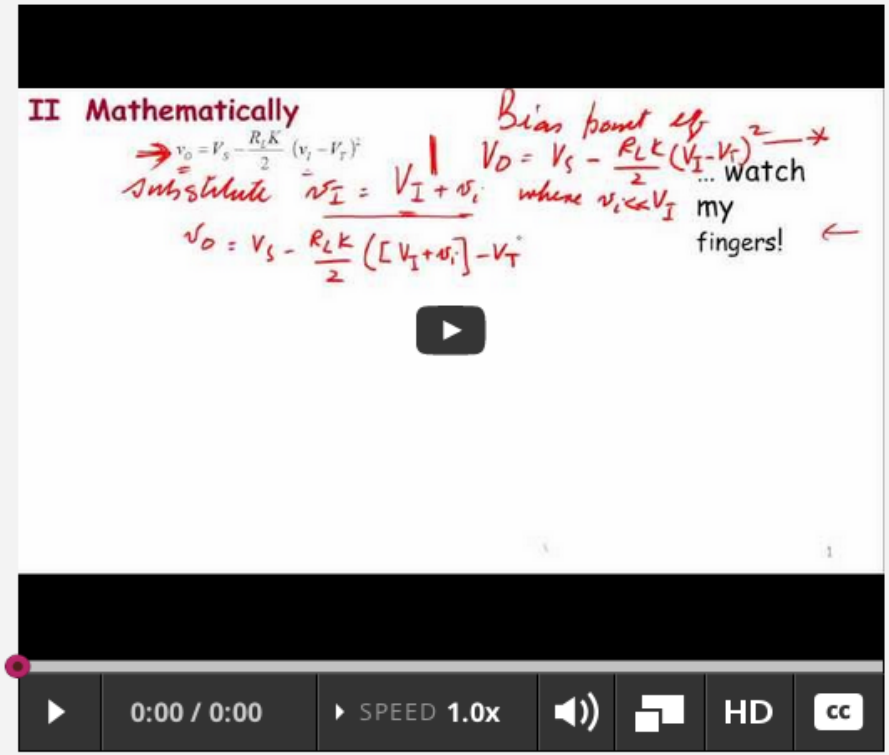
Week 5 Tutorials

Homework 5
Homework due Oct 14, 2012 at 00:00 UTC

Lab 5
Lab due Oct 14, 2012 at 00:00 UTC

Help

VIDEO



SPEAKER: As our next step, we are going to analyze the

response of the amplifier to small signals mathematically.

So I'm going to start with the vO versus VI equation for the

amplifier given right here.

And we've analyzed this before as part of

large signal analysis.

Help

S10E1: INCREMENTAL VOLTAGE (1 point possible)

For the simple common-source amplifier the lecturer just derived expressions for the operating point (bias) output voltage V_O as

$$V_O = V_S - \frac{R_L \cdot K}{2} \cdot (V_I - V_T)^2$$

and for the total output voltage v_O, including the incremental output voltage v_o

$$v_O = V_O + v_o = V_S - \frac{R_L \cdot K}{2} \cdot \left[(V_I - V_T)^2 + 2 \cdot (V_I - V_T) \cdot v_i + v_i^2\right]$$

In the space provided below write an algebraic expression for the best linear approximation to the incremental output voltage v_o, assuming that the incremental input voltage v_i is very small. Express your answer in terms of the device parameters K, V_T, R_L, the bias voltages V_S and V_I, and the incremental input voltage v_i. Be careful, algebraic expressions involving incremental quantities are case sensitive.

Our Approach
OpenAssessments.org

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EXAMPLE ASSESSMENT >

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Comparing Fractions

Question 1

1 of 10

$\frac{5}{12} \; ? \; \frac{3}{5}$

- Greater than (>)
- Less than (<)
- Equivalent (=)

Check Answer stats embed Previous Next

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New Relic

Proof-of-Concept

OpenAssessments.org

- **Embed an assessment in any web content**
- **Focus on formative assessments**
- **Start with limited question types (multiple-choice/ single answer, short answer)**

Demo!
(cross your fingers)

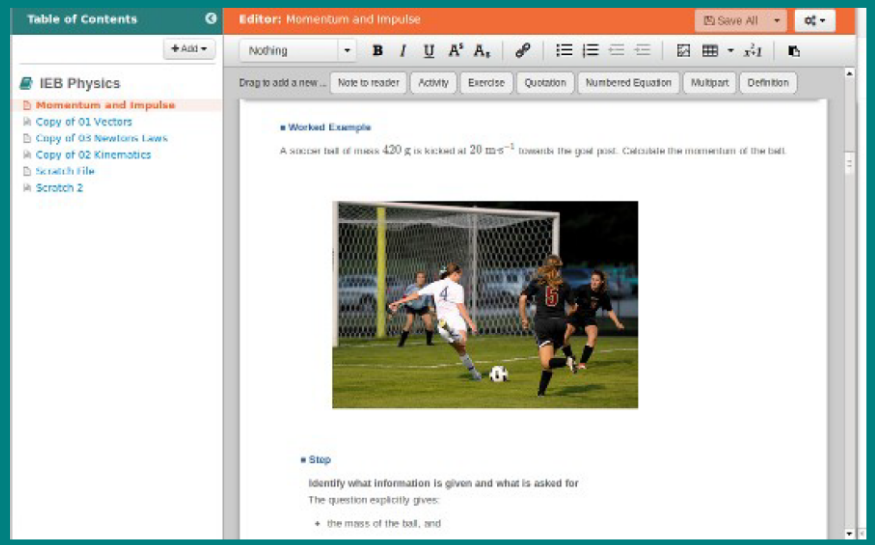
Justin Ball

Where might we embed assessments?

Real Remix Realized

Kathi Fletcher
@kefletcher, @oerpub

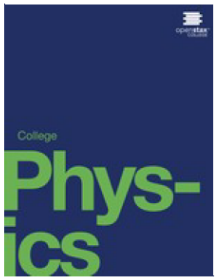
bit.ly / fletcher-opened13

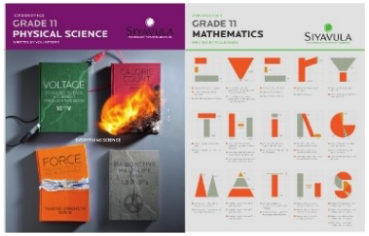


kathi.fletcher@gmail.com

Learning content

classes, textbooks, articles

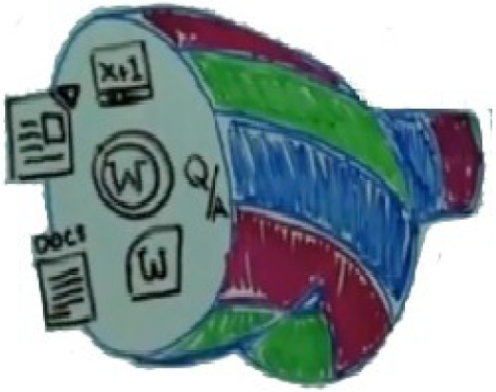


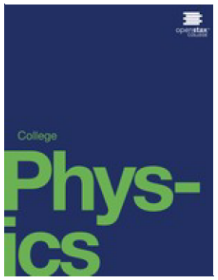


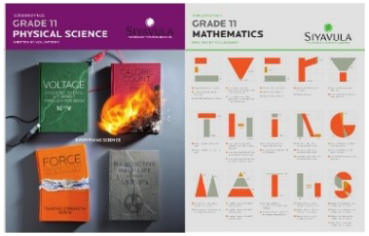
Transmogrified

classes, textbooks, articles

=>







Everywhere

classes, textbooks, articles **online, mobile, print**

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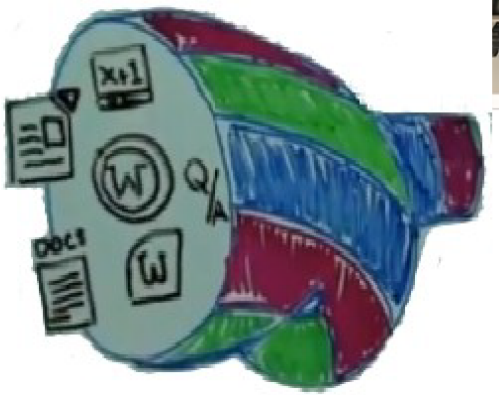

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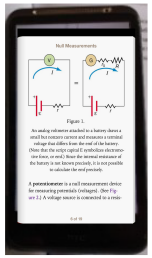

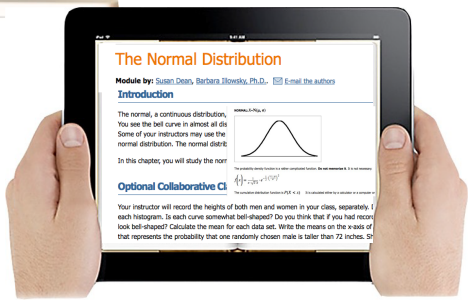

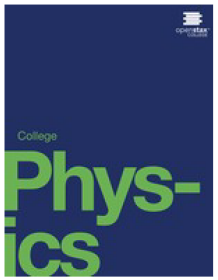

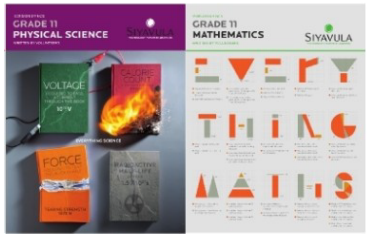

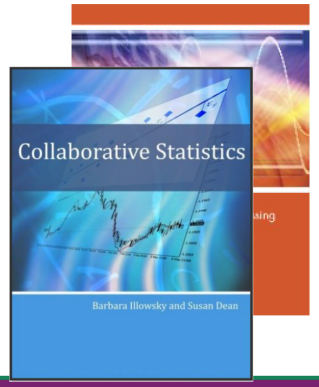

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Table of Contents

Editor: Momentum

Save All

Normal Text

Drag to add a new ... Note to reader Activity Exercise Quotation Numbered Equation Multipart Definition

Momentum

Momentum is a physical quantity which is closely related to forces. Momentum is a property which applies to moving objects, in fact it is mass in motion. If something has mass and it is moving then it has momentum.

Definition Momentum

The linear momentum of a particle (object) is a vector quantity equal to the product of the mass of the particle (object) and its velocity.

The momentum (symbol $\vec{p}$) of an object of mass m moving at velocity v is:

$$\vec{p} = m\vec{v}$$

Momentum is directly proportional to both the mass and velocity of an object. A small car travelling at the same velocity as a big truck will have a smaller momentum than the truck. The smaller the mass, the smaller the momentum for a fixed velocity. If the mass is constant then the greater the velocity the greater the momentum. The momentum will always be in the same direction as the velocity because mass is a scalar not a vector.

Vector nature of momentum

A car travelling at $120\text{~km·hr^\{-1\}}$ will have a larger momentum than the same car travelling at $60\text{~km·hr^\{-1\}}$. Momentum is also related to velocity; the smaller the velocity, the smaller the momentum.

Different objects can also have the same momentum, for example a car travelling slowly can have the same momentum as a motorcycle travelling relatively fast. We can easily demonstrate this.

Consider a car of mass 1000~kg with a velocity of $8\text{~m·s^\{-1\}}$ (about $30\text{~km·hr^\{-1\}}$) East. The momentum of the car is therefore:

$$\vec{p} = m\vec{v}$$

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Worked Example

A soccer ball of mass 420~g is kicked at 20~m·s^{-1} towards the goal post. Calculate the momentum of the ball.

Step

Identify what information is given and what is asked for

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Step

Identify what information is given and what is asked for

The question explicitly gives:

- the mass of the ball, and
- the velocity of the ball.

The mass of the ball must be converted to SI units.

$$420 \text{ g} = 0{,}42 \text{ kg}$$

We are asked to calculate the momentum of the ball. From the definition of momentum, $\vec{p} = m\vec{v}$ we see that we need the mass and velocity of the ball, which we are given.

Step

Do the calculation

We calculate the magnitude of the momentum of the ball,

$$\begin{aligned}\vec{p} &= m\vec{v}\\ &= (0{,}42)(20)\\ &= 8{,}40 \text{ kg·m·s^{-1}}\end{aligned}$$

Step

Quote the final answer

We quote the answer with the direction of motion included, $\vec{p}$ = 8,40~kg·m·s^{-1} in the direction of the goal post.

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■ **Activity** **Try it for yourself!**

Comparing Fractions

Question 1 — 1 of 10

$$\frac{5}{12} \; ? \; \frac{3}{5}$$

- Greater than (>)
- Less than (<)
- Equivalent (=)

Check Answer | Previous | Next

Open Item Banks

David Wiley

Bueller?... Bueller?... Bueller?...

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