



Open House 2016









Radio Frequency Electromagnetic Radiation from

Introduction

Radio frequency electromagnetic radiation (RF-EMR) is a type of non-ionizing radiation that is emitted by many electronic devices, including cell phones, Wi-Fi routers, and microwave ovens. While RF-EMR is generally considered to be safe, there is growing concern about its potential health effects, particularly its ability to heat tissue and cause DNA damage.

Abstract

This study investigated the effects of RF-EMR on the growth and development of zebrafish embryos. Zebrafish are a common model organism for studying the effects of environmental factors on development. The study found that exposure to RF-EMR resulted in a significant increase in the number of embryos that died or were malformed, suggesting that RF-EMR may be a developmental toxicant.



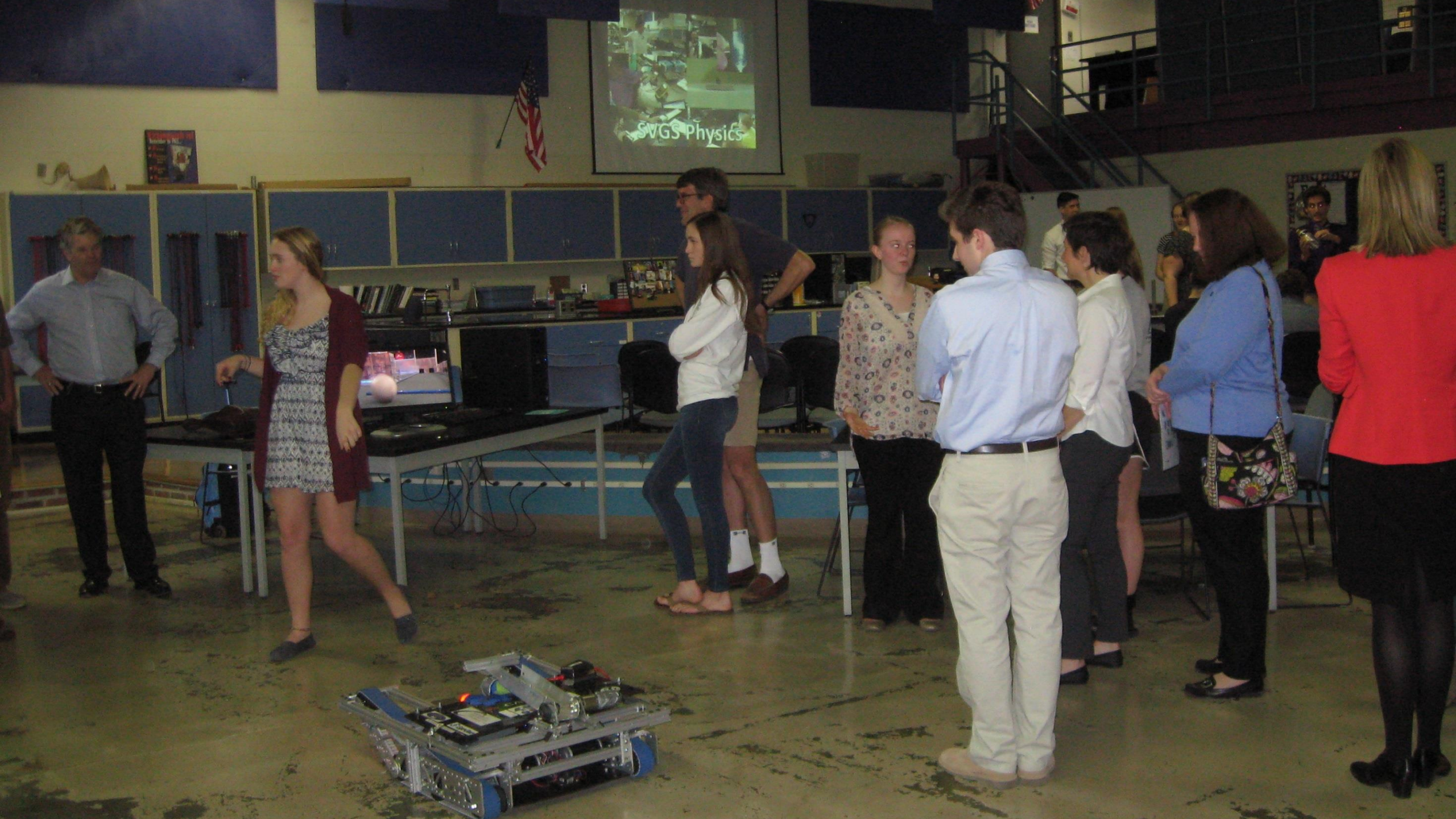
Data Analysis

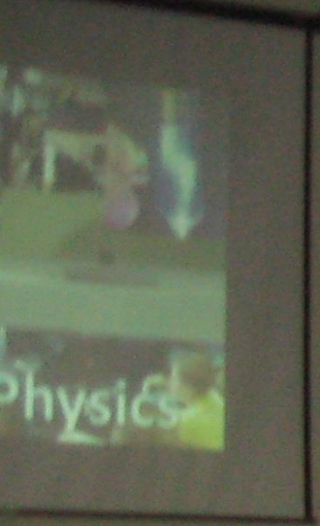
Source of Variation	df	SS	MS	F	P-value	Fcrit
Between Groups	1	1.00	1.00	2.00	0.054	16.01
Within Groups	19	0.25	0.013			
Total	20	1.25				

ANOVA table showing the results of the analysis of variance. The table includes columns for Source of Variation, df, SS, MS, F, P-value, and Fcrit. The P-value is 0.054, which is greater than the significance level of 0.05, indicating that the difference between the groups is not statistically significant.









Physics





Bridges

Truss Structures are triangular frames of weight supports with forces applied at different points of compression or tension. These supports allow us to bridge compression, tension, or bending.



Types of Truss Bridges

Beam Bridge - Structure that uses horizontal supports that slope down toward the ends.

Truss Bridge - Structure with diagonal members that support the load.

Arch Bridge - Structure that uses arches to support the load.

Compression - Compression is a force that acts to compress or shorten the object.

Tension - Tension is a force that acts to stretch or lengthen the object.

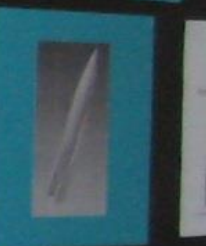
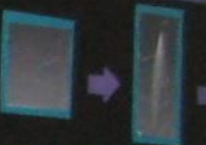
Structural Engineering

CAD Bracket Design

Bracket One Bracket Two Bracket Three



Designing a Stable Project



DEMONSTRATION PROJECTILE LAUNCHER



What is

Engineering?

ABET: Accreditation Board for
Engineering and Technology

Programs:

- Applied Sciences
- Computing
- Engineering
- Engineering Technology

VCU

Old Dominion

VT

Liberty

Liberty

MASON

RU

VCU

VCU

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Girls +
STEM =
Future

ENGINEERS

4 Quarters = 10 Dimes

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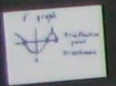
V=R

Micro



ivatives

A derivative is a function, f' , that describes the slope of a function, f .

$$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$$


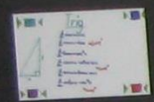
Derivative Rule:
If $f(x) = g(x) \cdot h(x)$, then $f'(x) = g'(x)h(x) + g(x)h'(x)$.



CHAIN RULE
If $y = f(u)$ and $u = g(x)$, then $\frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx}$.

Quotient Rule:
If $f(x) = \frac{g(x)}{h(x)}$, then $f'(x) = \frac{g'(x)h(x) - g(x)h'(x)}{(h(x))^2}$.

PRODUCT rule
If $f(x) = g(x) \cdot h(x)$, then $f'(x) = g'(x)h(x) + g(x)h'(x)$.



Derivative Rule:
If $f(x) = g(x) \cdot h(x)$, then $f'(x) = g'(x)h(x) + g(x)h'(x)$.

Geometric Series:
If $|r| < 1$, then $\sum_{n=0}^{\infty} ar^n = \frac{a}{1-r}$.

Arithmetic Series:
If a and d are constants, then $\sum_{n=0}^{\infty} (a + nd) = \frac{a}{d}$.

Geometric Series:
If $|r| < 1$, then $\sum_{n=0}^{\infty} ar^n = \frac{a}{1-r}$.

Taylor Polynomials:
If $f(x)$ is a function, then $T_n(x) = \sum_{k=0}^n \frac{f^{(k)}(a)}{k!} (x-a)^k$.

Harmonic Series:
If $p > 1$, then $\sum_{n=1}^{\infty} \frac{1}{n^p}$ converges.

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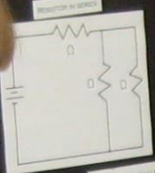




MICROCONTROLLER

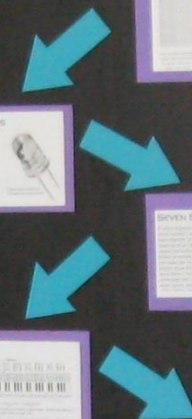
$$V=IR$$

Introduction to Microcontrollers



LOGIC GATES

LEDs



BREADBOARD

SEVEN SEGMENT DISPLAY

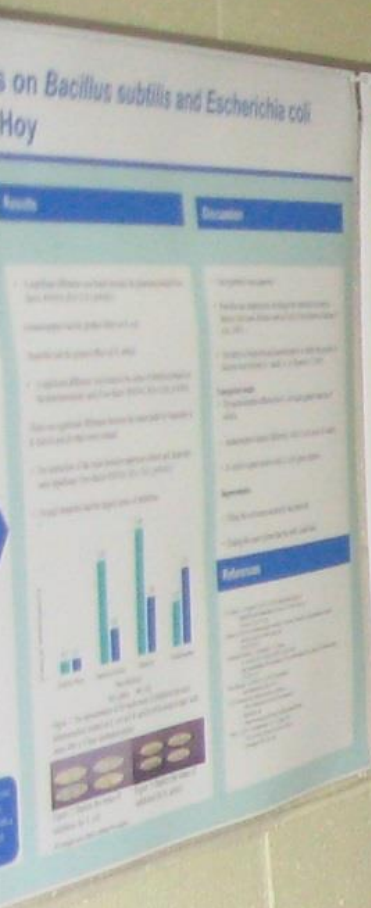
SPEAKERS

MOTORS















Shows

Book of Mormon
Apr. 14-15
Friday on the
Apr. 15

Les Misérables
Apr. 14-15
Friday on the
Apr. 15

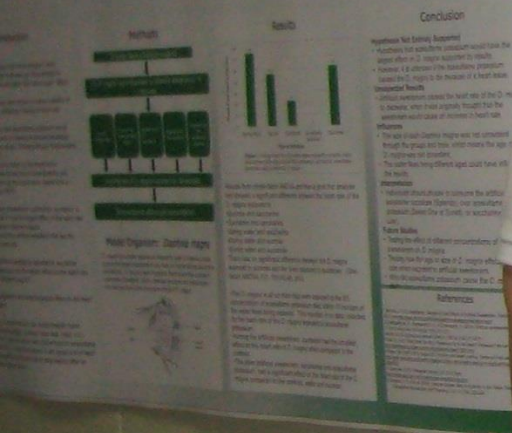
Book of Mormon
Apr. 14-15
Friday on the
Apr. 15





The Effect of Artificial Sweeteners on the Heart Rate of Water Fleas (*Daphnia magna*)

Emily Aleshevich



The Effects of Naproxen, Ibuprofen, and Aspirin on *Escherichia coli* and *Staphylococcus subtilis*

Shash Valley Governor's School



Electric-Vehicle Battery Testing













Thank you for all your work!



Have a safe and relaxing
spring break!