

# Physics Problem Generator

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## Purpose:

Generate physics problems for self-teaching purpose.

## Basic functions:

- Produce physics problems randomly or systematically as you like.
- Each problem has changing values and answers every time you run the program.
- The program outputs the generated problems in a dat.file so that it can be printed out as a paper sheet to work on.

## Another application:

The program can be used by teachers who want to avoid their students to cheat during exams/quizzes.

# Coding Blocks

**Input:** Choose either systematic or random version



**Input:** Enter how many problems you want to work on.



**Output:** Generate problems  
Generate answers at the end

**Basic Coding:** random functions, if statements and for loops

# Visualization

Problem[31]-----

A Feynman diagram shows the interaction of two electrons through the exchange of a \_\_\_\_.

- (a)omegaton
- (b)pion
- (c)virtual photon
- (d)anti-neutrino

Ans.: (c)

Problem[27]-----

The ground-state energy of a harmonic oscillator is 8.5eV. If the oscillator undergoes a transition from its  $n=4$  to  $n=1$  level by emitting a photon, what is the wavelength of the photon?

- (a)25.3299 [nm]
- (b)23.3299 [nm]
- (c)26.3299 [nm]
- (d)24.3299 [nm]

Ans.: (d)

Problem[21]-----

Fermions are particles with integer spin. T/F

Ans.: False

**Figure 1:** A screen shot from the generated notepad file.

**Input:** The random version, 37 problems