

**What is the relationship between the mass of a damped spring-block oscillator and the damping ratio?**

Physics HL

Internal Assessment

Word count: TBD

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# **1 Introduction**

This essay extends the investigation of simple harmonic motion by studying the damping force of a damped oscillator submerged in water, aiming to scrutinize the relationship between the mass of the block and the damping ratio. By scrutinizing this relationship, the study aims to offer valuable insights that can inform the design of systems seeking to optimize damping levels for safety-related objectives.

## **1.1 The Research Question**

What is the relationship between the mass of a damped spring-block oscillator and the damping ratio?

## 1.2 Background Information

### 1.3 Hypothesis

### 1.4 Variables

## 2 Main Dody

### 2.1 Data Collection

#### 2.1.1 Apparatus and Materials

#### 2.1.2 Procedures and Reproducing the Experiment

#### 2.1.3 Risk Assessment

### 2.2 Data Processing

### 2.3 Data Analysis

#### 2.3.1 Uncertainty Analysis

## 3 Conclusion

### 3.1 Evaluation

### 3.2 Extensibility