**Experimental Report 3**

***MOMENT OF INERTIA OF THE SYMMETRIC RIGID BODIES***

Verification of the instructors

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**Group:** 01

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#### I/ Experiment Motivations

* Calculating the moment of the inertia on the symmetric bodies
* Gaining knowledge about the moment of inertia in symmetric rigid bodies

**II/ Experimental result**

1. **Measurement of the rod:**

| Trial | T (s) |
| --- | --- |
| 1 | 2.627 |
| 2 | 2.626 |
| 3 | 2.628 |
| 4 | 2.630 |
| 5 | 2.629 |
|  |  |

1. **Measurement of the solid disk:**

| Trial | T (s) |
| --- | --- |
| 1 | 2.069 |
| 2 | 2.074 |
| 3 | 2.073 |
| 4 | 2.071 |
| 5 | 2.072 |
|  |  |

1. **Measurement of the hollow cylinder:**
2. **Supported disk:**

| Trial | T (s) |
| --- | --- |
| 1 | 0.324 |
| 2 | 0.324 |
| 3 | 0.323 |
| 4 | 0.325 |
| 5 | 0.323 |
|  |  |

1. **Supported disk + hollow cylinder:**

| Trial | T (s) |
| --- | --- |
| 1 | 1.128 |
| 2 | 1.129 |
| 3 | 1.129 |
| 4 | 1.128 |
| 5 | 1.132 |
|  |  |

1. **Measurement of the solid sphere:**

| Trial | T (s) |
| --- | --- |
| 1 | 2.134 |
| 2 | 2.138 |
| 3 | 2.139 |
| 4 | 2.143 |
| 5 | 2.141 |
|  |  |

**III. Data processing**

#### Rod:

* 1. **Moment of inertia obtained by experiment.**

Then

**Hence**

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#### Moment of inertia calculated by the theoretical formula.

#### The difference between theoretical and experimental numbers:

#### Solid disk

#### Moment of inertia obtained by experiment.

Then

**Hence**

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#### Moment of inertia calculated by the theoretical formula.

#### The difference between theoretical and experimental numbers:

#### Hollow cylinder

#### Moment of inertia obtained by experiment.

#### Moment of inertia of the supported disk

Then

* Moment of inertia of the coupled object (support disk + hollow cylinder)

Then

Then

**Hence**

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#### Moment of inertia calculated by the theoretical formula.

#### The difference between theoretical and experimental numbers:

#### Solid sphere

#### Moment of inertia obtained by experiment.

Then

**Hence**

|  |
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#### Moment of inertia calculated by the theoretical formula.

#### The difference between theoretical and experimental numbers: