Hidrodinamikai Rendszerek Tanszék

Measurement of the revolution number, moment of inertia and friction torque

1. measurement

Name, Neptun code: ……

Curse: ……

Instructor: ……

Measurement staff:

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Location: ……

Date: ……

Signature: ……

1. Aim of the measurement

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2. Short description of the measurement process

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3. Sketch of the measurement rig

1. rig (measurement of moment of inertia)

2. rig (measurement of n(t) diagram)

4. Formulae for evaluation of measured data

- Moment of inertia of a physical pendulum:
- Moment of inertia of a rotating part of the electromotor (rotor):
- Friction torque:
- Slope of the tangent line of ***n(t)*** diagram:
- Angular velocity from ***n(t)*** diagram:

5. List of equipment used during the measurement (type, serial number)

- Electromotor used in measurement of moment of inertia:
    - type:
    - serial number:
- Time period measurement device used in measurement of moment of inertia:
    - type:
    - serial number:
- Caliper:
    - type:
    - serial number:

- Electromotor used in measurement of ***n(t)*** diagram
    - type:
    - serial number:

- Jacquet indicator:
  - type:
  - serial number:
- Revolution number transducer used in measurement of ***n(t)*** diagram:
  - type:
  - serial number:

6. Measurement data and their evaluation

(It is compulsory to substitute into the formulae during the evaluation)

6.1 Measurement of moment of inertia

Parameters of additional mass:

d = m_a = e =

Measured period of oscillation

T =

Moment of inertia of physical pendulum and rotor:

Θ_p =

Θ =

Mean value of moment of inertia:

Sorsz.	Θ [kg m^2]
1.	
2.	
3.	
4.	
Θ_M	

Summary table of moment of inertia values

6.2 n(t) diagram and the friction torque

The own point read from the program:

Number:

t = n = ε =

Calculated friction torque in the own point

M_f =

Nr.	t [s]	n [1/min]	ε [1/s^2]	M_f [Nm]
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				

Summary table of the friction torque

6.3 Check of angular acceleration

The own point read from the program:

N***umber:***

t_1 = n_1 =

Calculated quantities

Δt_1 =

tan α_1 =

ε_1 =

7. Summary of the measurement *(in a couple of sentences)*

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8. List of attachments

(2 pc diagram)

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