

Unit 4 - Week 2

Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Classical Mechanics: L8: Euler Lagrange Equations. Examples continued

Classical Mechanics: L9: Properties of Lagrangian

Classical Mechanics: L10: Kinetic term in generalized coordinates

Classical Mechanics: L11: Cyclic coordinates

Classical Mechanics: L12: Conservation laws - Conservation of Energy

Classical Mechanics: L13: Energy Function, Jacobi's Integral

Classical Mechanics: L14: Momentum conservation

Quiz : Assignment 2

Week 2 Feedback Form : Introduction to Classical Mechanics

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Week 12

Live session

Video Download

Assignment 2

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-09-30, 23:59 IST.

1) Lagrangian of a free particle in cylindrical coordinates is

5 points

$$L = \frac{1}{2}m(\dot{\rho}^2 + \rho^2\dot{\alpha}^2) + \frac{1}{2}m\dot{z}^2.$$

Which of the following is NOT a cyclic coordinate?

ρ

α

z

No, the answer is incorrect.
Score: 0

Accepted Answers:

ρ

2) Lagrangian of a system is given by

5 points

$$L = \frac{1}{2}m\dot{q}_1^2 + \frac{1}{2}m\dot{q}_2^2 - \frac{1}{2}k(q_2 - q_1)^2.$$

Re-express the Lagrangian using the following transformation

$$q_1 = \frac{1}{\sqrt{m}} \frac{Q_1 + Q_2}{\sqrt{2}}, \quad q_2 = \frac{1}{\sqrt{m}} \frac{Q_1 - Q_2}{\sqrt{2}}.$$

Which of the following is a cyclic coordinate?

Q_1

Q_2

$Q_1 + Q_2$

$Q_1 - Q_2$

No, the answer is incorrect.
Score: 0

Accepted Answers:

Q_1