



THE EFFECT OF SOLAR RADIATION PRESSURE ON THE LIBERATION POINTS OF THE RESTRICTED FOUR-BODY PROBLEM

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ABSTRACT

In this paper, the effect of the radiation force body problem with constant pressure is studied. The problem is solved as an initial value problem. The radiation pressure is considered as a perturbation of the restricted four-body problem. The radiation pressure is considered as a perturbation of the restricted four-body problem. The radiation pressure is considered as a perturbation of the restricted four-body problem.

Keywords: Restricted four-body problem, radiation pressure, constant pressure, perturbation.

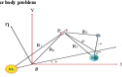
1. INTRODUCTION

The restricted four-body problem is a generalization of the restricted three-body problem. It consists of three primary bodies and one secondary body of negligible mass. The radiation pressure is considered as a perturbation of the restricted four-body problem. The radiation pressure is considered as a perturbation of the restricted four-body problem.

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2. Draw the free body diagram of the beam and determine the reaction forces.



The beam is supported by a fixed support at A and a roller support at B. The forces F1 to F10 are applied to the beam as shown. The forces F11 to F20 are applied to the beam as shown. The forces F21 to F30 are applied to the beam as shown. The forces F31 to F40 are applied to the beam as shown. The forces F41 to F50 are applied to the beam as shown. The forces F51 to F60 are applied to the beam as shown. The forces F61 to F70 are applied to the beam as shown. The forces F71 to F80 are applied to the beam as shown. The forces F81 to F90 are applied to the beam as shown. The forces F91 to F100 are applied to the beam as shown.

- 1. Draw the free body diagram of the beam. (10 points)
- 2. Determine the reaction forces at A and B. (10 points)

The reaction forces at A and B are: RA = 100 kN, RB = 50 kN.

The reaction forces at A and B are: RA = 100 kN, RB = 50 kN.



Answer the following questions. Show all work. Answers should be boxed. Answers without work will not be graded.

1. Let $f(x) = \frac{1}{x^2} + \frac{1}{x^3}$. Find $f'(x)$.

Answer: $f'(x) = -\frac{2}{x^3} - \frac{3}{x^4}$ (10)

2. Let $f(x) = \sin(x)$. Find $f''(x)$.

Answer: $f''(x) = -\sin(x)$ (10)

3. Let $f(x) = \ln(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{x}$ (10)

4. Let $f(x) = e^x$. Find $f'(x)$.

Answer: $f'(x) = e^x$ (10)

5. Let $f(x) = \cos(x)$. Find $f'(x)$.

Answer: $f'(x) = -\sin(x)$ (10)

6. Let $f(x) = \tan(x)$. Find $f'(x)$.

Answer: $f'(x) = \sec^2(x)$ (10)

7. Let $f(x) = \cot(x)$. Find $f'(x)$.

Answer: $f'(x) = -\csc^2(x)$ (10)

8. Let $f(x) = \sec(x)$. Find $f'(x)$.

Answer: $f'(x) = \sec(x)\tan(x)$ (10)

9. Let $f(x) = \csc(x)$. Find $f'(x)$.

Answer: $f'(x) = -\csc(x)\cot(x)$ (10)

10. Let $f(x) = \arcsin(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{\sqrt{1-x^2}}$ (10)

11. Let $f(x) = \arccos(x)$. Find $f'(x)$.

Answer: $f'(x) = -\frac{1}{\sqrt{1-x^2}}$ (10)

12. Let $f(x) = \arctan(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{1+x^2}$ (10)

13. Let $f(x) = \operatorname{arccot}(x)$. Find $f'(x)$.

Answer: $f'(x) = -\frac{1}{1+x^2}$ (10)

14. Let $f(x) = \sin^{-1}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{\sqrt{1-x^2}}$ (10)

15. Let $f(x) = \cos^{-1}(x)$. Find $f'(x)$.

Answer: $f'(x) = -\frac{1}{\sqrt{1-x^2}}$ (10)

16. Let $f(x) = \tan^{-1}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{1+x^2}$ (10)

17. Let $f(x) = \cot^{-1}(x)$. Find $f'(x)$.

Answer: $f'(x) = -\frac{1}{1+x^2}$ (10)

18. Let $f(x) = \sec^{-1}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{x\sqrt{x^2-1}}$ (10)

19. Let $f(x) = \csc^{-1}(x)$. Find $f'(x)$.

Answer: $f'(x) = -\frac{1}{x\sqrt{x^2-1}}$ (10)

20. Let $f(x) = \operatorname{arcsinh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{\sqrt{1+x^2}}$ (10)

21. Let $f(x) = \operatorname{arccosh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{\sqrt{x^2-1}}$ (10)

22. Let $f(x) = \operatorname{artanh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{1-x^2}$ (10)

23. Let $f(x) = \operatorname{arcoth}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{1-x^2}$ (10)

24. Let $f(x) = \operatorname{arcsech}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{x\sqrt{1-x^2}}$ (10)

25. Let $f(x) = \operatorname{arcosh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{x\sqrt{x^2-1}}$ (10)

26. Let $f(x) = \operatorname{arcsch}(x)$. Find $f'(x)$.

Answer: $f'(x) = -\frac{1}{x\sqrt{1-x^2}}$ (10)

27. Let $f(x) = \operatorname{arcsinh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{\sqrt{1+x^2}}$ (10)

28. Let $f(x) = \operatorname{arccosh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{\sqrt{x^2-1}}$ (10)

29. Let $f(x) = \operatorname{artanh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{1-x^2}$ (10)

30. Let $f(x) = \operatorname{arcoth}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{1-x^2}$ (10)

31. Let $f(x) = \operatorname{arcsech}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{x\sqrt{1-x^2}}$ (10)

32. Let $f(x) = \operatorname{arcosh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{x\sqrt{x^2-1}}$ (10)

33. Let $f(x) = \operatorname{arcsch}(x)$. Find $f'(x)$.

Answer: $f'(x) = -\frac{1}{x\sqrt{1-x^2}}$ (10)

34. Let $f(x) = \operatorname{arcsinh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{\sqrt{1+x^2}}$ (10)

35. Let $f(x) = \operatorname{arccosh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{\sqrt{x^2-1}}$ (10)

36. Let $f(x) = \operatorname{artanh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{1-x^2}$ (10)

37. Let $f(x) = \operatorname{arcoth}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{1-x^2}$ (10)

38. Let $f(x) = \operatorname{arcsech}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{x\sqrt{1-x^2}}$ (10)

39. Let $f(x) = \operatorname{arcosh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{x\sqrt{x^2-1}}$ (10)

40. Let $f(x) = \operatorname{arcsch}(x)$. Find $f'(x)$.

Answer: $f'(x) = -\frac{1}{x\sqrt{1-x^2}}$ (10)

41. Let $f(x) = \operatorname{arcsinh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{\sqrt{1+x^2}}$ (10)

42. Let $f(x) = \operatorname{arccosh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{\sqrt{x^2-1}}$ (10)

43. Let $f(x) = \operatorname{artanh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{1-x^2}$ (10)

44. Let $f(x) = \operatorname{arcoth}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{1-x^2}$ (10)

45. Let $f(x) = \operatorname{arcsech}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{x\sqrt{1-x^2}}$ (10)

46. Let $f(x) = \operatorname{arcosh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{x\sqrt{x^2-1}}$ (10)

47. Let $f(x) = \operatorname{arcsch}(x)$. Find $f'(x)$.

Answer: $f'(x) = -\frac{1}{x\sqrt{1-x^2}}$ (10)

48. Let $f(x) = \operatorname{arcsinh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{\sqrt{1+x^2}}$ (10)

49. Let $f(x) = \operatorname{arccosh}(x)$. Find $f'(x)$.

Answer: $f'(x) = \frac{1}{\sqrt{x^2-1}}$ (10)



7. Conclusions

The results of the present study indicate that the proposed SP, SP, SP model is effective in predicting the performance of the SP, SP, SP model. The results of the present study indicate that the proposed SP, SP, SP model is effective in predicting the performance of the SP, SP, SP model.

8. REFERENCES

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