

# Orbital Mechanics: Examples

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# Overview

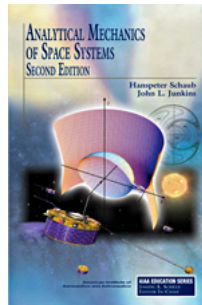
- 1 Schaub & Junkins
- 2 Goldstein's Proof
- 3 Backup Slides

# Analytical Mechanics of Space Systems



**hanspeter2003analytical**

# Analytical Mechanics of Space Systems



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# Goldstein's Proof

## APPENDIX A

### Proof of Bertrand's Theorem\*

The orbit equation under a conservative central force, Eq. (3-34), may be written

$$\frac{d^2u}{d\theta^2} + u = J(u), \quad (\text{A-1})$$

where

$$J(u) = -\frac{m}{l^2} \frac{d}{du} V\left(\frac{1}{u}\right) = -\frac{m}{l^2 u^2} f\left(\frac{1}{u}\right). \quad (\text{A-2})$$

The condition for a circular orbit of radius  $r_0 = u_0^{-1}$ , Eq. (3-41), now takes the form

$$u_0 = J(u_0). \quad (\text{A-3})$$

goldstein2eclassical

# Goldstein Errata

- 1 Errata report on Herbert Goldstein's Classical Mechanics 2e<sup>1</sup>
- 2 Errata, corrections and comments on Classical Mechanics, 3e<sup>2</sup>
- 3 Errors in Goldstein's Classical Mechanics<sup>3</sup>

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<sup>1</sup>osti-6712863

<sup>2</sup>goldstein3errata

<sup>3</sup>tiersten2003errors

# Professional Societies: Computational Mechanics



The banner features a background image of the Paris skyline with the Eiffel Tower. On the left, the IACM logo is shown next to the ECCOMAS Thematic Conference logo. Below these, the text 'DTE & AICOMAS 2025' is prominently displayed. To the right, the text 'Save the date' is written in a bold, black font. Below this, the conference details are listed: '3rd IACM Digital Twins in Engineering Conference (DTE 2025) & 1st ECCOMAS Artificial Intelligence and Computational Methods in Applied Science (AICOMAS 2025)' and the dates '17-21 February 2025, Paris, France'.

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# Bibliography I



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