

Numerical Method for Ordinary differential equations and Its Application in Physics

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Abstract

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1 Introduction

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2 Examples of ordinary differential problems in physics

2.1 The Earth-Sun system

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2.2 Many body problem

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3 Numerical methods

3.1 Euler forward method

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3.2 Velocity-Verlet method

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3.3 Object oriented code development

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4 Results and discussion

4.1 Comparison between two methods

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4.2 Escape velocity against the Sun

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4.3 Extension to whole solar system

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4.4 The perihelion precession of Mercury

5 Conclusions

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References