

On the Monte Carlo simulation of anisotropic Newtonian gravitation

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Abstract

This paper contains a short introduction to anisotropic Newtonian gravitation. The main focus is on some C++ code.

1 Introduction

$$\alpha = \frac{\beta(R + \epsilon) - \beta(R)}{\epsilon}. \quad (1)$$

$$g = \frac{-\alpha}{r^2}. \quad (2)$$

$$a_N = \sqrt{\frac{nG\hbar \log 2}{4k\pi R^4}}, \quad (3)$$

$$v_N = \sqrt{a_N R}. \quad (4)$$

$$v_{\text{flat}} = xv_N \quad (5)$$

where $x = 2$ for example.

$$a_{\text{flat}} = \frac{v_{\text{flat}}^2}{R} = \frac{gR\hbar \log 2}{k2\pi M}. \quad (6)$$

$$g_N = \frac{a_N k2\pi M}{R\hbar \log 2}. \quad (7)$$

$$a_{\text{flat}} \propto g. \quad (8)$$

$$a_{\text{ratio}} = \frac{a_{\text{flat}}}{a_N}. \quad (9)$$

$$g_{\text{ratio}} = \frac{g}{g_N}. \quad (10)$$

D is where $g_{\text{ratio}} \geq a_{\text{ratio}}$.

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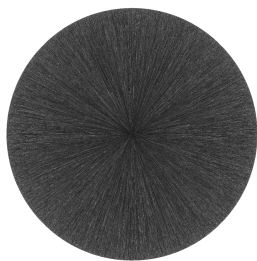


Figure 1: Where $D = 3$, as viewed from the side. The field lines are isotropic, spherical.

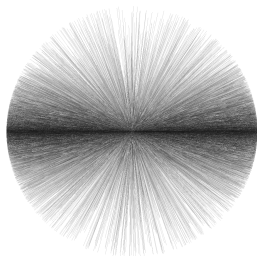


Figure 2: Where $D = 2.1$, as viewed from the side. The field lines are increasingly anisotropic.



Figure 3: Where $D = 2.001$, as viewed from the side. The field lines are anisotropic, disk-like.

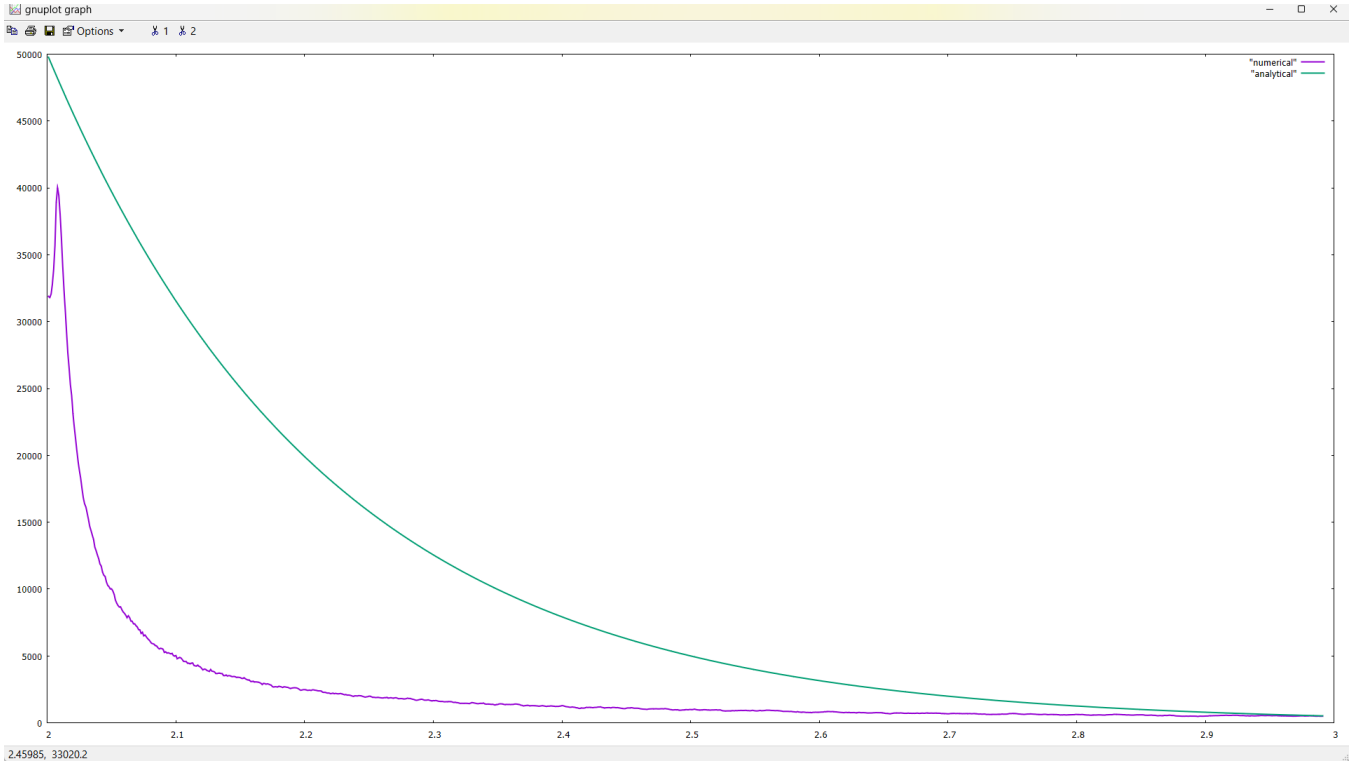


Figure 4: $R = 100$, $r = 1$, $n = 10^8$, $\epsilon = 1$. The analytical plot is generated by the formula $y = n/(2R^D)$.

References

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- [3] Susskind. The World as a Hologram. (1994)