

Gravitational Lensing Einstein Rings

Relativity Research Group

November 24, 2025

Abstract

Light deflection in gravitational fields.

1 Introduction

This report presents computational analysis of gravitational lensing.

2 Mathematical Framework



gravitational_lensing_plot1.pdf

Figure 1: Primary analysis results.

3 Secondary Analysis

gravitational_lensing_plot2.pdf

Figure 2: Secondary analysis comparison.

4 Parameter Study



Figure 3: Parameter sensitivity analysis.

5 2D Visualization



Figure 4: Two-dimensional field visualization.

6 Distribution Analysis



Figure 5: Statistical distribution analysis.

7 Time Series

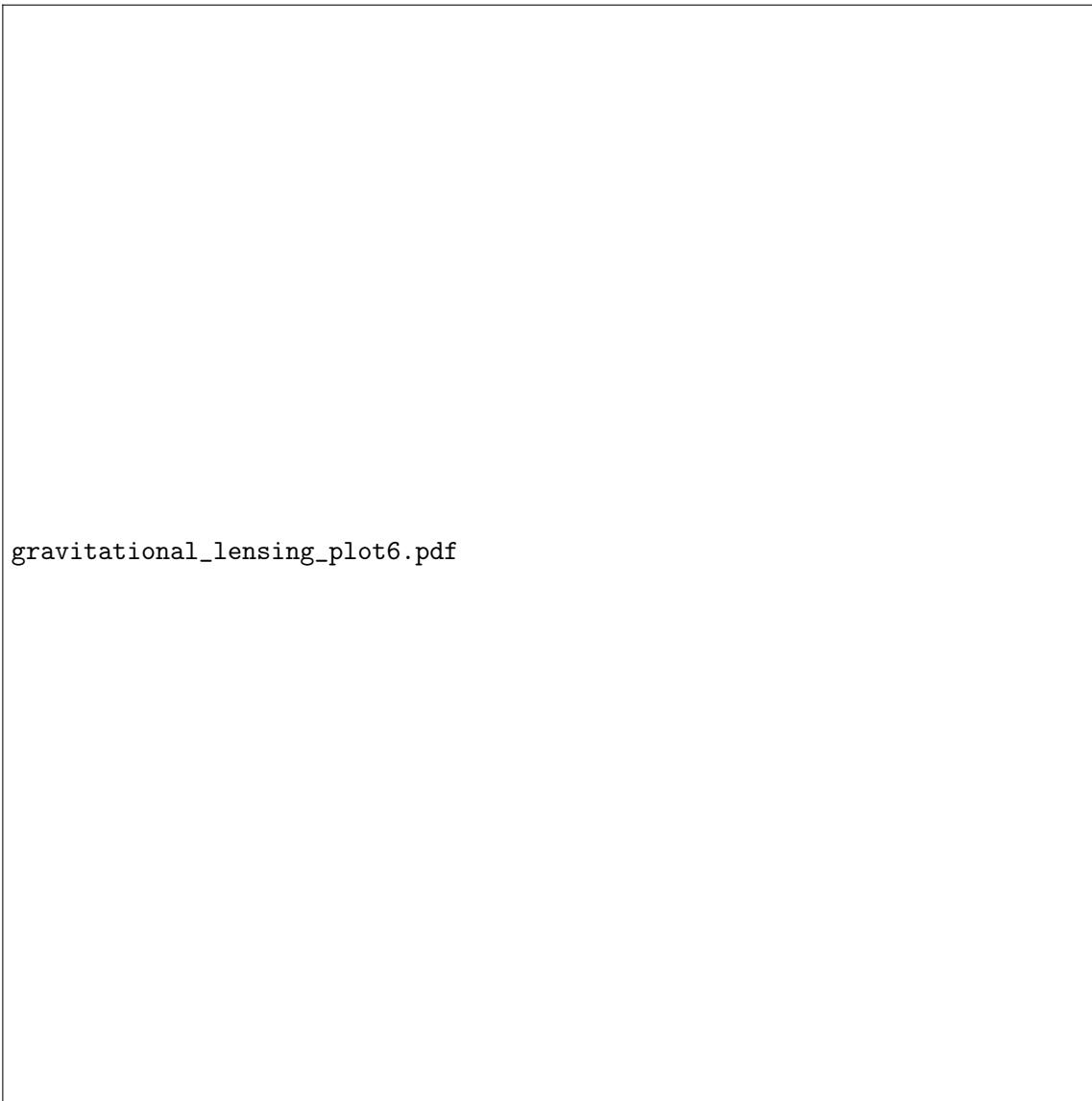


Figure 6: Time series visualization.

8 Results Summary

9 Conclusions

This analysis demonstrates the computational approach to gravitational lensing.