

DETECTION OF UNIVERSALITY OF DARK MATTER PROFILE FROM SUBARU WEAK LENSING MEASUREMENTS OF 50 MASSIVE CLUSTERS

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ABSTRACT

TBD

1. INTRODUCTION

PBH introduction

2. GRAVITATIONAL MICROLENSING OF HYPER SUPRIME-CAM DATA-3

- introduction of MACHO microlensing
- Hyper Suprime-Cam and advantage for microlensing
Hyper Suprime-Cam (HSC) is a wide-field imaging camera attached at the prime focus of Subaru telescope. This camera consists of 116 CCD chips; 104 for science, 4 for auto-guide, and 8 for auto-focus, and each CCD has 2k x 4k pixels, with a pixel scale of 0.168 arcsec. One unique characteristic of this camera is the wide field of view (FoV) as large as 1.5 degree at a single frame, which is three times larger than the size of full Moon in radius. Also high resolution is expected owing to the large primary mirror of 8.2 meters in effective diameter and low humidity of the summit of Mauna Kea. 261 robotic fingers keep the primary mirror in a perfect shape no matter where the telescope is pointing in the sky. The filter transmittance is shown by Fig. ?? using the HSC filter model¹ including quantum efficiency of fully depleted CCDs (FDCCDs), transmittance of the dewar window, transmittance of the Primary Focus Unit of the HSC (POpt2), and reflectivity of the Primary Mirror.
- target mass range

3. FORMULAS-2

3.1. Point-Source Microlensing-2

independent section about microlensing and analytic estimate, numerical estimate-1

3.2. Finite-Source Microlensing-2

3.3. Finite-Source Microlensing with Limb-Darkening-2

3.4. Effect of Limb Darkening on the Numerical Estimate of Expected Number of Events-2(new sec.)

4. DATA ANALYSIS AND EVENT SELECTION-3

- properties of data (PSF flux,sampling...)
- selection criteria of variable candidates (summary in a table)

¹ <http://subarutelescope.org/Observing/Instruments/HSC/sensitivity.html>

4.1. Statistics and Selection Criteria-3

explain each selection criteria about shape characteristics of light curves (naive explanation, how many events are rejected by each criteria)

4.1.1. Foreground Moving Objects in the M31 field-3

events which passed selection criteria:commets

5. EFFICIENCY CALCULATION-3

- halo model
- equations of expected number of event detection (this section can be moved to front)
- Monte Carlo efficiency calculation
- estimation of source distance
- abundance limit

6. LIMITS ON PBH DARK MATTER AND DISCUSSION-3

comparison with other data

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REFERENCES