Tittle of grant: Constraints on Ho From Time-Delay Measurements of PG1115+080

Type of report: Final Summary of Research

Name of principle investigator: George Chartas

Period covered by the report: 9/1/00 - 9/14/03

Name and Address of the recipient's institution:
Penn State University
Department of Astronomy and Astrophysics
525 Davey Lab,
University Park, PA 16802

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The observations that were performed as part of the award titled: Constraints on Ho From Time-Delay Measurements of PG1115+080 resulted in several scientific publications and presentations. We list these publications and presentations and provide brief description of the important science presented in them.

Publications:

Chartas, G., Dai, X., & Garmire, G. P. 2004, mmu, sympE, 1C, Measuring and Modeling the Universe, from the Carnegie Observatories Centennial Symposia. Carnegie Observatories Astrophysics Series. Edited by W. L. Freedman, 2004. Pasadena: Carnegie Observatories, http://www.ociw.edu/ociw/symposia/series/symposium2/proceedings.html

Abstract:
We report the first detection of time-delayed flares in single X-ray observations of the gravitationally lensed quasar PG 1115+080 performed with the Chandra and XMM observatories. By combining our observed short time-delay between images A1 and A2 of PG 1115+080 of tA1A2 = 0.149+/-0.006 days with recent constraints on the mass fraction and slope of the dark matter component of the lensing galaxy (Treu & Koopmans 2002) we are able to narrow the allowable set of lens models for PG 1115+080 and thus obtain a tighter limit on the Hubble constant via the lensing method of $H_0 = 67^{+13}_{-8}$ +/- 3 km s^{-1} Mpc^{-1} (random + systematic errors).

Presentations:

Chandra and XMM-Newton Results on the Hubble Constant from Gravitational Lensing, presented at the Carnegie Observatories Centennial Symposium II: Measuring and Modeling the Universe, Carnegie Observatories, November, 2002.