

## Kailash Chandra Sahu

### Address:

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### Education:

- Ph.D. (Astronomy): 1985, Physical Research Laboratory, India
- M.Sc. (Physics): 1977, Berhampur University (1st position in the University)
- B.Sc. (Hons. in Physics): 1975, Berhampur Univ. (1st Class with Distinction)

### Professional Positions:

- 1995 – present: STScI (current position: Associate Astronomer with tenure, NIRCam/JWST Instrument Scientist)
- 1994 – 1995: Associate at European Southern Observatory, Munich, Germany
- 1992 – 1994: Support Astronomer at Institute of Astrophysics, Tenerife, Spain
  
- 1987 – 1992: Postdoc at Kapteyn Laboratory, Groningen, The Netherlands (including one and half years as support astronomer at La Palma Observatory)
- 1985 – 1987: Postdoc at Institute of Astrophysics, Paris, France

### Academic Memberships:

- International Society of Optical Engineering
- International Astronomical Union
- American Astronomical Society
- American Association for the Advancement of Science

### Awards:

- GOLD MEDAL for highest rank in the University in M.Sc.(Physics)
- STScI science-merit award in 2000
- STScI science-merit award in 2001
- GSFC/NASA Group Achievement award in 2005
- AURA Team award for science operations in 2006
- Certificate of Excellence for fast recovery of ACS operations in 2006
- STScI Outstanding Achievement award for recovery of cycle 15 science operations in 2007

### Current Research Interests:

- Search for extra-solar planets through transits and microlensing
- Gravitational microlensing and implications on dark matter
- Study of stellar structure through monitoring of microlensing events
- Gamma-Ray Bursts.

### Languages:

English, Hindi, Oriya, Spanish

**Publications:**

- 216 scientific publications which include:
- 85 in refereed journals (including 8 in Nature)
- 2 edited books
- 6 invited reviews
- 1 STIS Instrument Handbook (v3.0)
- 17 HST-related Instrument Science Reports/Technical Instrument Reports.

**Current Teaching and Mentorship Activities**

- Supervision of graduate students and post-doctoral fellows at Johns Hopkins Univ. and STScI
- Teaching undergraduate/graduate classes at IIT, Kapteyn Lab and JHU
- Supervision of summer students at STScI
- Supervision and mentoring of science data analysts in science and HST-related projects at STScI.

**List of research grants currently held**

- HST GO Large Program 9750, PI: K.C. Sahu, “The Galactic Bulge Deep Field: A Planetary Transit Survey and Very Deep Stellar Mass Function”, 112 orbits, \$354,000
- HST General Observer Program 9751, PI: K.C. Sahu, “Accurate Mass Determination of the Ancient White Dwarf ER 8 Through Astrometric Microlensing”, 20 orbits, \$142,000
- HST General Observer Program 11311, PI: K.C. Sahu, “The high-amplification microlensing event OGLE-2007-BLG-224: a substellar lens in the Galactic disk or a low-mass stellar lens in the halo?”, 4 orbits, \$102,000
- HST General Observer Program 11707, PI: K.C. Sahu, “Detecting Isolated Black Holes through Astrometric Microlensing”, 20 orbits, \$158,000

**Mission-related Activities**

- CoI for the MPF (Microlensing Planet Finder) proposal, which is a proposed space mission dedicated to search for extrasolar planets in the Galactic bulge through microlensing
- CoI for the Large Space Telescope (LST) proposal being led by Steve Beckwith at STScI.
- CoI of the ATLAS Telescope project

**Science-related Service Activities**

- Submitted a "white paper" to the National Academy's Exoplanet Task Force, for strategy to detect and characterize exoplanets.
- Through a paper in ApJ (Sahu and Gilliland, 2003, ApJ, 584, 1042), I pointed out the effectiveness of the Kepler mission in detecting white dwarfs, and how the effect of microlensing can be used to distinguish a transit signal caused by an earth-size planet
- Organized STARS/ISM/IGM Journal club at STScI for ~7 years (1998-2005).
- Co-founded and organized PLANET Collaboration activities, including many observing programs.

- Served as the external examiner for several Ph.D. theses, from US, New Zealand and the Netherlands
- Served as organizer of the Antarctica Session for the AAS meeting
- Served in the organizing committee for several International symposia, including the STScI May symposia in 2001, 2003, 2005 and 2008
- Organized the “Monday Lunch” talks at Kapteyn Laboratory, Groningen, for one year.
- Worked as a “Support Astronomer” at La Palma Observatory for one and a half years (1988-90).
- Worked as a “Support Astronomer” at Teide Observatory (Tenerife) for one and a half years (1992-94).
- Refereed more than 4 dozen papers for ApJ, A&A, AJ and Nature.
- Served on several NASA Proposal Review processes.
- Served as “Panel Support Scientist” for HST phase-I proposal reviews in 2 cycles.
- Served as a project scientist for the proposed discovery class mission MPF (Microlensing Planet Finder).

#### **A Few Selected Recent Colloquia and Invited Talks**

- “Limits on Substellar and Planetary-Mass Objects through Microlensing from SWEEPS Data” SAAO, July 2008
- “Worlds in Transit” SAAO, July 2008
- “Worlds in Transit” Univ. Arizona, March 2008
- “Ultra-short-period planets” JHU, Sept 21, 2006.
- “Discovery of the most earth-like planet through microlensing”, Goddard Space Flight Center, ‘Exoplanets’ seminar series, October, 2005.
- “Search for Planets around Stars towards the Galactic Bulge Using HST”, Ringberg workshop on Planet Formation 2004, held at Ringberg in Dec, 2004.
- “Search for Planets around Stars towards the Galactic Bulge Using HST”, Summer school on “Extra-solar Planets”, held at Univ. Catolica, Chile, in Dec. 2003.
- “Search for Dark Matter and Extra-Solar Planets” Yale Univ. October, 2003
- “Effects of Microlensing on Transit Observations”, Eddington Workshop, Palermo, Italy, Sep 2003.
- “A Kaleidoscopic View through Gravity’s Lenses”, June 2002, Kapteyn Laboratory, Groningen, The Netherlands
- “Search for Dark Matter and Extra-Solar Planets through Gravitational Microlensing”, U. de Chile, Aug 2002
- “Search for Dark Matter and Extra-Solar Planets through Gravitational Microlensing” Univ. of Nagoya, Japan, Nov. 27, 2001
- “Gravitational Microlensing” Open-Night Talk, STScI, October, 2001
- “MACHOs: A Different View”, STScI Symp. on Dark Matter and Dark Energy, April 2001.

#### **Selected Recent Observing Runs with Ground-based Telescopes**

Co-founded the PLANET collaboration, where we conduct continuous, 24-hour monitoring of microlensing events using 4 different telescopes at appropriately

spaced longitudes. Since 1995, we typically observe for about 3 continuous months during the “bulge-season” to look for extra-solar planets.

- ESO Danish 1.5m Telescope, 10 nights in August 2007, imaging for PLANET microlensing followup network
- ESO Very large Telescope, 4 nights in June, 2004 at the 8m telescope, "Radial Velocity spectroscopic observations of SWEEPS Exoplanet Candidates"
- Sutherland Observatory, 2 weeks in July, 2006 at the 1m telescope, “PLANET program”
- ESO Very large Telescope, 4 nights in June, 2004 at the 8m telescope, “Radial Velocity observations of SWEEPS Exoplanet Candidates”
- 1-m telescope at CTIO, to monitor ongoing microlensing events to look for planets (“PLANET program”), 2 weeks, Aug 2004
- Very Large Array, Socorro, June, 1998, “Radio continuum observations of the most luminous X-ray cluster RXJ1347.5-1145”
- Kitt-Peak, Oct 1997, 7 nights at the Coude-feed telescope, for “High-res spectroscopy of 51-Peg type stars”

As a support astronomer at different observatories, I had several observing runs with ground-based optical telescopes, which are too numerous to list here.

### **Outreach Activities**

- NASA Science Update: October 4, 2006, titled "Hubble Finds Extrasolar Planets Far Across Galaxy" (with Jennifer Wiseman of NASA Headquarters as the moderator, and Mario Livio and Alan Boss as the other co-panelists.) The results announced in this NSU:
- Generated articles in >1,000 newspapers and magazines (as per the list produced by the STScI OPO division) all over the world in English language alone. It also appeared in Spanish, Dutch, French, Polish, German, Hindi, Oriya, and many other language newspapers.
- Highlighted the SWEEPS image which was voted "the picture of the week" in Time magazine.
- Rated by Astronomy magazine as one of the top 10 astronomical results of 2006. Resulted in an article in the 2006 Hubblebook.