

STEFAN W. MOCHNACKI

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Academic and scientific CV is available at: [Academic CV \(abbreviated\)](#)

Detailed list of instrumentation projects is at: [Instrument Project List](#)

Detailed list of computing experience is at: [Computing Experience](#)

ASTRONOMICAL AND SPACE INSTRUMENTATION

Recently retired astronomy professor applying skills and experience to manage and solve problems in:

- Development of small satellites for high-precision photometry and spectroscopy from space.
- Development and characterization of electronic photodetectors.
- Development of computer programmes for instrument control and analysis of observations.
- Automation of small telescopes and observatories.
- Construction and commissioning of spectrographs and cameras.
- Observation and precise modeling of close binary star light curves and line profiles.

PROFESSIONAL EXPERIENCE

Dept. of Astronomy and Astrophysics, University of Toronto:

Associate Professor with tenure, July 1986 - Dec. 2014; Assistant Professor, Sep. 1981-86. Projects included:

- BRITE-CONSTELLATION (2003-2014): Acted as Canadian Instrument Scientist during the conception, design and commissioning phases of the six-nanosatellite project, as a member of the BRITE Executive Science Team. In early 2009, helped generate Polish interest in BRITE participation.
- M Dwarf spectroscopic survey at David Dunlap Observatory (1998-2002) (PI).
- Photon-Tagging enhancement of PCS (PI), 1990.
- Photon Counting Spectrometer (PI), 1982-87, an improvement of the Latham-Geary version of Sheckman's RETICON-based 1-D photo-intensifier dual detector design.

Research Leaves:

Jan.-Aug. 2013: *Nicolaus Copernicus Astronomical Center, Warsaw.*

- BRITE-CONSTELLATION: Evaluation of pre-flight calibrations and first in-orbit observations; leadership of "Tiger Team" to deal with radiation damage to CCD sensors.

Dec. 2007- Jul. 2008: *Institute for Astronomy, University of Vienna*

- BRITE-CONSTELLATION: Evaluation of laboratory simulated star field measurements to determine effect of undersampling. Comparison of CCD and CMOS detectors in Toronto laboratories.
- Numerical simulation of effects of undersampling with spacecraft pointing jitter.

May 2001 - Aug. 2002: *Observatories of the Carnegie Institution of Washington, Pasadena.*

- Design and construction of electrical subsystems and calibration lamps for MIKE (Magellan Inamori-Kyocera Echelle spectrograph), (S. Sheckman, PI)
- First observation of contact binaries in another galaxy.

Dominion Astrophysical Observatory, HIA, NRC, Victoria, B.C. Research Associate, 1980-1981

- Porting and further development of spectroscopic reduction and analysis software.

Palomar Observatory, Caltech, Pasadena, CA. Research Fellow 1977-1980

- Contact binary star properties and evolution.
- Spectrophotometric observing, reductions and analysis (stars and galaxies).

Geophysics and Astronomy Department, U.B.C., Vancouver. Ph.D. Student 1971-1977

- Design, development and application of RETICON imaging detectors.
- Development of an early image processing package.

Physics Department, University of Canterbury, New Zealand. B.Sc.(Hons.) and M.Sc. student: 1966-1971

- Modeling and fitting light curves and line profiles of close binary stars.
- First precise fits to totally-eclipsing contact binary light curves using synthesis techniques.
- Testing and application of MOSFET-based current-to-frequency converters for PMT photometry.

QUALIFICATIONS & HISTORY

Tenure	1986	University of Toronto, Dept. of Astronomy & Astrophysics
Ph.D. in Astronomy	1977	University of British Columbia "Area Photometry with a Multi-Diode Array" (Supervisor: Gordon A. H. Walker)
M.Sc. (with Distinction)	1971	University of Canterbury, N.Z. "The W Ursae Majoris Stars: Interpretation of Light Curves and Line Profiles" (Supervisor: Noel A. Dougherty)
B.Sc. (Hons.) in Physics	1970	University of Canterbury, N.Z.

Languages: English (native speaker), Polish (fluent), French (written), Russian (scientific reading)

Citizenships: Polish, Canadian, U.K. Born 18th December 1947, St. Neots, England.

Residential History: U.K. (1947-52), N.Z. (1952-1971), Canada (1971-2016) incl. 4 yrs. US, 2 yr PL, 1 yr AT.

SOME RELEVANT PUBLICATIONS

- Pablo, H., Whittaker, G. N., Popowicz, A., Mochacki, S. W., Kuschnig, R., Grant, C. C., Moffat, A. F. J., Rucinski, S. M., Matthews, J. M., Schwarzenberg-Czerny, A., Handler, G., Weiss, W. W., Baade, D., Wade, G.A., Zocłońska, E., Ramiamanantsoa, T., Unterberger, M., Zwintz, K., Pigulski, A., Rowe, J., Koudelka, O., Orleański, P., Pamyatnykh, A., Neiner, C., Wawrzaszek, R., Marciniszyn, G., Romano, P., Woźniak, G., Zawistowski, T., Zee, R. E., "The BRITE Constellation Nanosatellite Mission: Testing, Commissioning, and Operations", *Publ. of the Astron. Soc. of the Pacific*, **128**, 125001 (2016)
- Mochacki, S.W. "Application of the GDDSYN Method in the Era of KEPLER, CoRoT, MOST and BRITE", in "Interacting Binaries to Exoplanets: Essential Modeling Tools", *Proceedings IAU Symposium No. 282*, 2011, Mercedes Richards & Ivan Hubeny, eds., pp. 287-292 (2012)
- Kaiser, A., Mochacki, S.W., Weiss, W.W. "BRITE-Constellation: Simulation of Photometric Performance", *Communications in Asteroseismology*, **152**, 43-50 (2008)
- Kaluzny, J., Mochacki, S. And Rucinski, S. "Variable Stars in the Large Magellanic Cloud: Discovery of Extragalactic W UMa Binaries", *The Astronomical Journal*, **131**, 407-413 (2006)
- Bernstein, R., Sheckman, S.A., Gunnels, S. M., Mochacki, S., Athey, A. E. "MIKE: A Double Echelle Spectrograph for the Magellan Telescopes at Las Campanas Observatory" Instrument Design and Performance for Optical/Infrared Ground-based Telescopes. Edited by Iye, Masanori & Moorwood, Alan F. M. *Proceedings of the SPIE*, Volume **4841**, pp. 1694-1704 (2003).

(Full list of refereed and conference publications can be accessed via [NASA ADS Abstract Service](#))