

CURRICULUM VITAE

Dr. John B. Sigwarth

Biographical Sketch

Dr. Sigwarth is a research scientist at The University of Iowa. Most recently, his research has focused upon the conjugate nature of the northern and southern auroras; the driving of the aurora by sharp increases in the dynamic pressure in the solar wind impacting the magnetosphere; the coupling efficiency of energy from the solar wind to the magnetosphere as a function of the state of the solar wind; the use of global auroral images to retrieve the energy deposition by auroral particles precipitating into the ionosphere; and the study of the rate of production of oxygen, hydroxide, and sodium from Comet Hale-Bopp. Dr Sigwarth has authored or co-authored 120 presentations at scientific conferences and 64 papers for publication.

Dr. Sigwarth serves currently as project scientist for the Visible Imaging System (VIS) that is one of the 11 instruments onboard the POLAR spacecraft managed by the NASA Goddard Space Flight Center (GSFC). The VIS is a space flight qualified imager designed to acquire visible and ultraviolet images of Earth's aurorae, dayglow, ozone layer, and nightglow at the rate of approximately 1500 images per day. Dr. Sigwarth was responsible for the analysis and implementation of the VIS designs to insure that project goals could be attained. In particular, he designed the VIS Low Resolution Camera and the Medium Resolution Camera visible optics, the VIS Earth Camera ultraviolet optics, and the optical relays for the three sensors. Also, he was directly responsible for the analysis, manufacture and testing of the optical systems of the VIS. Dr. Sigwarth was responsible for final design, assembly and testing of the three VIS sensors. Each sensor consists of an image intensifier coupled by an optical relay to a Charge Coupled Device (CCD). In addition, he designed the VIS optical calibration setup, authored instrument test procedures, developed image analysis software, completed the calibration tests and performed analysis of the calibration data. Dr. Sigwarth was responsible for verification, validation and space flight qualification of the VIS through the complete testing cycle prior to launch. This testing included integration with the spacecraft as well as all major spacecraft level tests including vibration and thermal vacuum testing.

As project scientist for the VIS, Dr. Sigwarth has day-to-day oversight and responsibility for all aspects of the project including direction of tasks undertaken by the VIS team, personnel management and interfacing with the project office at GSFC. Dr. Sigwarth directs and participates in the post-launch operations of the VIS and takes a lead role in the scientific analyses of the images. These analyses include the study of high-time and high-spatial resolution observations of the auroral oval and the relation of these observations to in-situ measurements of the solar wind and magnetosphere acquired with the international array of spacecraft currently in operation. Dr. Sigwarth is also the VIS team lead for Education and Public Outreach activities.

Dr. Sigwarth received his Ph.D. from The University of Iowa in December, 1989. In the falll semesters of 1997-1999, he was part of a three person team to teach an introductory level course on Chemistry and Physics of the Environment to a class of greater than 300 students. Dr. Sigwarth is a member of the American Geophysical Union.

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Education B. S. Physics, Mathematical Sciences 1983 (The University of Iowa)
 M. S. Physics 1988 (The University of Iowa)
 Ph.D. Physics 1989 (The University of Iowa)

Honors

National Aeronautics and Space Administration Group Achievement Award in recognition of contributions to the highly successful exploration of geospace by the Global Geospace Science program, June 16, 1998.

Global Geospace Science Project Award in recognition of outstanding performance as Project Scientist for the Visible Imaging System, April 26, 1993.

National Science Foundation Graduate Fellow, 1983-1986.

Sigma Pi Sigma Physics Student Honor Society, 1983.

The James A. Van Allen Award for outstanding work in Physics while a student at The University of Iowa, 1982.

Publications

Sigwarth, J. B., N. J. Fox, and L. A. Frank, Global Auroral Response to Dynamic Pressure Impulses in the Solar Wind, to be submitted to J. Geophys. Res. by April 30, 2002.

Sigwarth, J. B., N. J. Fox, and L. A. Frank, The Coupling Efficiency of the Solar Wind Magnetic Flux to Earth's Magnetosphere, to be submitted to J. Geophys. Res. by June 15, 2002.

- Sigwarth, J. B., N. J. Fox, L. A. Frank, and D. Lummerzheim, Determination of the Energy and Energy Flux of Precipitating Electrons During an Auroral Substorm, to be submitted to J. Geophys. Res. by July 31, 2002.
- Sigwarth, J. B., On the Global Conjugacy of the Nighttime Auroral Oval, to be submitted to J. Geophys. Res. by September 15, 2002.
- Sigwarth, J. B., N. J. Fox, and L. A. Frank, Global Production of Na, O, and OH from Comet Hale-Bopp at Perihelion, to be submitted to J. Geophys. Res. by October 31, 2002.
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Presentations

Anderson, P. C., D. L. McKenzie, N. Ostgaard, S. A. Cummer, M. J. Brittnacher, G. A. Germany, J. B. Sigwarth and L. A. Frank, Multispectral Imaging Results from the Polar Spacecraft, EOS, 82(20), 288, 2001.

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