

SCOTT E. WEIDNER

Assistant Vice President for Engineering

In the Office of the Vice President for the Princeton Plasma Physics Laboratory (PPPL)
Princeton University

M.S., Management of Technology, University of Texas at San Antonio, 2012

M.S., Electrical Engineering, Purdue University, 1991

B.S., Computer Engineering, University of Michigan, 1982

Mr. Weidner has over 35 years' experience in research and development engineering.

Currently, Mr. Weidner serves as the Assistant Vice President for Engineering in the Office of the Vice President for PPPL where he provides leadership and oversight of the project management and engineering processes at PPPL. He is particularly focused on the work that is currently underway on the National Spherical Torus Experiment Upgrade (NSTX-U) machine at PPPL, which when brought back online, will be the most power experimental fusion tokamak of its type in the world.

For the last two decades, he has designed, built, tested, and delivered scientific instruments for numerous spaceflight missions. He has demonstrated the ability to lead international teams through the development of new technology for challenging environments which perform successfully on-orbit and lead to significant scientific discovery.

Currently, Mr. Weidner serves as the Project Manager for the Integrated Science Investigation of the Sun (ISOIS) on the Parker Solar Probe (PSP) mission in which he manages instrument development effort occurring in seven different US institutions. The PSP spacecraft will fly within nine radii of the surface of the Sun to discover the fundamental links between the dynamic solar atmosphere and the solar wind, the mechanisms that heat the Sun's corona and accelerate the solar wind, and the processes that energize and transport solar energetic particles.

Mr. Weidner was also the SwRI lead for the Dual Ion Spectrometer which is part of the Fast Plasma Investigation for the Magnetospheric Multiscale mission (MMS). The MMS mission uses four identical spacecraft, orbiting the Earth in close formation, to make three-dimensional measurements of magnetospheric boundary regions and examine the process of magnetic reconnection. The DIS instruments were developed in Japan by ISAS and the Meisei Electric Company. The detectors for the instrument were supplied from France by IRAP. Calibration was performed at NASA's Marshall Space Flight Center. This multi-national technical effort required careful management and communication for success.

Mr. Weidner served as the Instrument Manager for the Jovian Auroral Distributions Experiment (JADE) on the Juno mission to Jupiter. JADE is a suite of electron and ion sensors that measures the full pitch angle distribution of electrons and the three-dimensional velocity-space distribution of ions in Jupiter's magnetosphere. He led a large team of 35 scientists, engineers, and technicians who designed and built this instrument. He was responsible for budget, schedule, technical leadership, and mentoring of younger staff members on this project. He coordinated the efforts of foreign and domestic subcontractors, worked with the spacecraft vendor to solve accommodation issues, and was the primary JADE point-of-contact for the Juno Payload Office at NASA's Jet Propulsion Lab.

Mr. Weidner led the detector development for the HI Sensor for the Interstellar Boundary Explorer (IBEX) mission. The IBEX payload contains two Energetic Neutral Atom cameras which has made the first global image of the interaction between our sun's heliosphere and the local interstellar medium.

As Lead Engineer for the Solar Wind Around Pluto (SWAP) Instrument that is flying on the New Horizons mission to Pluto, Mr. Weidner led a team of engineers in the development of the electro-optics, detectors, high voltage power supplies, mechanical packaging, and flight software. He designed the analog front-end electronics as well as the control board electronics and its FPGA.

On NASA's Deep Impact mission to the comet Tempel I, Mr. Weidner designed the Attitude Propulsion Interface Board (APIB) that was redundantly cross-strapped on the flyby-spacecraft and monitored coarse sun sensors, drove reaction wheels, measured tank pressure, controlled hydrazine latch valves, and included a unique thruster valve drive circuit that provided step-back and hold capability to minimize power during the battery-only long burn on the impactor-spacecraft.

Mr. Weidner has worked on several other spaceflight instruments. He designed the front-end electronics for the Two Wide-angle Imaging Neutral-atom Spectrometers (TWINS). This included the imaging anode, charge amplifiers, time-of-flight electronics, pulse height analysis electronics, and the digital control board and FPGA which processes events in real-time and buffers them for the CPU. He designed the analog electronics for the Ion Electron Spectrometer (IES) instrument on the European Space Agency's Rosetta Mission, which is in orbit around the comet 67P/Churyumov-Gerasimenko. He served as the Lead Electrical Engineer for the Medium Energy Neutral Atom (MENA) imager on NASA's Imager from Magnetopause to Aurora for Global Exploration (IMAGE) mission.

Previously at Southwest Research Institute, Mr. Weidner has been responsible for designing electronic systems for a wide variety of instrumentation projects. He has designed, delivered, and supported ultrasonic in-service inspection equipment around the world for the nuclear power industry.

RELEVANT PUBLICATIONS:

- Zirnstein, E.J., ... S. Weidner, et al, "Interplanetary Magnetic Field Sector from Solar Wind Around Pluto (SWAP) Measurements of Heavy Ion Pickup Near Pluto", *The Astrophysical Journal Letters*, 823:L30 (6pp), 2016 June 1 DOI 10.3847/2041-8205/823/2/L30
- Desai, M.I., ... S. E. Weidner, et al, "An integrated time-of-flight versus residual energy subsystem for a compact dual ion composition experiment for space plasmas", *Review of Scientific Instruments* 86, 054501 (2015) DOI 10.1063/1.4921706
- Stern, S.A., ... S. Weidner, et al, "The Pluto system: Initial results from its exploration by New Horizons", *Science* (2015), Volume 350, 292 DOI 10.1126/science.aad1815
- McComas, D.J., ... S. Weidner, et al, "Integrated Science Investigation of the Sun (ISIS): Design of the energetic particle investigation", *Space Science Reviews* (2014), DOI 10.1007/s11214-014-0059-1
- McComas, D.J., ... S. Weidner, et al., "The Jovian Auroral Distributions Experiment (JADE) on the Juno Mission to Jupiter", *Space Science Reviews* (2013), DOI 10.1007/s11214-013-9990-9
- Ebert, R.W., ... S. Weidner, et al., "A Composition Analysis Tool for the Solar Wind Around Pluto (SWAP) Instrument on New Horizons", *Space Sci Rev* (2010) 156: 1–12, DOI 10.1007/s11214-010-9683-6
- Funsten, H.O., ... S. Weidner, et al., "The Interstellar Boundary Explorer High Energy (IBEX-Hi) Neutral Atom Imager", *Space Science Reviews*, Volume 146, Issue 1-4, pp. 75-103, 2009
- McComas, D.J., ... S. Weidner, et al., "The Two Wide-angle Imaging Neutral-atom Spectrometers (TWINS) NASA Mission-of-Opportunity", *Space Sci Rev* (2009) 142: 157–231 DOI 10.1007/s11214-008-9467-4
- Allegrini, F., ... S. Weidner, et al., "The IBEX Background Monitor", *Space Sci Rev* (2009) 146: 105–115, DOI 10.1007/s11214-008-9439-8
- McComas, D.J., ... S. Weidner, et al., "The Solar Wind Around Pluto (SWAP) Instrument Aboard New Horizons", *Space Science Reviews*, Volume 140, Issue 1-4, pp. 261-313, 2008
- Pollock C.J., ... S.E. Weidner, et al., "Medium energy neutral atom (MENA) imager for the IMAGE mission", *Space Sci. Rev.* 91, 113–154 (2000)

PROFESSIONAL CHRONOLOGY:

McDonnell Douglas Corporation: 1983-1990 [engineer, 1983-5; senior engineer, 1985-8; lead engineer, 1988-90];

Southwest Research Institute: 1992-2016 [Nondestructive Evaluation Science and Technology Division: senior research engineer, 1992-6; Space Science and Engineering Division: senior research engineer, 1996-2001; principal engineer, 2001-5; staff engineer, 2005-15; institute engineer, 2015-16].

Princeton University: 2016-present [Assistant Vice President for Engineering in the Office of the Vice President for PPPL]

MEMBERSHIPS:

Institute of Electrical and Electronic Engineers (IEEE), Senior Member, Member of the Nuclear and Plasma Sciences Society

Advisory Board for the Urban Science Initiative Inc., a 501c (3) non-profit corporation focused on science and technology education.