

44TH ANNUAL
PRECISE TIME AND TIME INTERVAL (PTTI)
SYSTEMS AND APPLICATIONS MEETING

PROCEEDINGS OF A MEETING SPONSORED BY

**THE U.S. NAVAL OBSERVATORY
THE U.S. NAVAL RESEARCH LABORATORY
THE NASA JET PROPULSION LABORATORY
THE DEFENSE INFORMATION SYSTEMS AGENCY**

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**NANCY C. BLEMLY, EDITOR
U.S. DEPARTMENT OF DEFENSE**

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DISTINGUISHED PTTI SERVICE AWARD

**MR. RONALD L. BEARD
U.S. NAVAL RESEARCH LABORATORY**

**Presented by
Dr. Dennis D. McCarthy
U.S. Naval Observatory**



The Distinguished PTTI Service Award acknowledges contributions related to the management of PTTI systems. It recognizes individuals who have provided exceptional leadership and demonstrated ability and ingenuity in the development or application of PTTI over a number of years or who have designed or developed a significant PTTI system. Since it was instituted in 1994, it has been awarded in seventeen years.

This year the award is presented to a person familiar to all in the PTTI Meeting community, to someone who has been a member of the PTTI Planning Meeting Executive Committee since

1984, the Technical Program Chair for the 1994 Meeting, General Chair in 1995, and technical session chair many times over the years. That would be Ronald Beard, Head of the Space Applications Branch of the Naval Research Laboratory. At NRL, Ron oversees three sections that provide the scientific expertise, manpower, and technical management to perform research and development in areas that include space systems designed to furnish accurate navigational information, the precise location of equipment, and time synchronization. The development of highly stable atomic frequency standards for space borne application in GPS is a primary mission area. The Branch continues in its role as the Center of Excellence for time and frequency testing of military and commercial GPS timing receivers and user equipment within the Joint Test Agency Working Group centered at Holloman AFB.

In addition to this responsibility, Ron has served as Program Manager for the NAVSTAR GPS Clock Technology Program and the Manager of the NRL Space Surveillance Modernization Program. The former involves the development of atomic clocks for space and ground application ranging from the physics of the clocks to their performance in GPS and other systems. He developed the design and construction of a space qualified hydrogen maser capable of operation in a GPS satellite and a ground model designed for operation in ground tracking stations. A significant capability developed within the Branch is the Precise Clock Evaluation Facility, comprised of precise references, measurement systems and environmental chambers configured to enable prolonged testing of space qualified atomic clocks in a space-like environment.

He has been a member of numerous national and international working groups, was the originator and principal investigator for the Laser Retro-reflector Experiment included as secondary payloads on

NAVSTAR 35 and 36, and was a major contributor to establishing the NATO requirement for common time.

He became a member of the U.S. Working Party 7A of the International Telecommunications Union – Radiocommunications Sector (ITU-R) Study Group 7 in 1994, and has served as ITU-R Representative to the Consultative Committee for Time and Frequency and as Vice Chair of U.S. Working Party 7A from 1999 through 2003. He was the ITU-R Special Rapporteur on the Future of the UTC Time Scale and in that capacity organized a special colloquium on the Future of the UTC Time Scale. He currently serves as the International Chair of ITU-R Sector Working Party 7A.

As a recognized expert he has been actively involved in the development, consultation, or review of a number of space and space-related projects, served as technical reviewer of papers submitted for publication in technical journals, and authored numerous publications.

It is a pleasure to present the PTTI Award to Ron Beard in recognition of his many significant contributions to PTTI.

PTTI 2012 SESSION CHAIRS

SESSION I: Vendor Presentations

JOSEPH WHITE

Naval Research Laboratory

SESSION VII: Receiver Performance on PTTI Systems

MICHAEL LOMBARDI

National Institute of Standards and Technology

SESSION II: Laboratory Reports and Activity Updates

ANGELA MCKINLEY

U.S. Naval Observatory

SESSION VIII: Local Clock Timekeeping Using Innovative Sources

MARC WEISS

National Institute of Standards and Technology

JEFF GARSTECKI

JHU Applied Physics Laboratory

SESSION III: Time and Frequency Transfer – Satellite

JOERG HAHN

European Space Agency

SESSION IX: Time Scales and Algorithms

MIHRAN MIRANIAN

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SESSION IV: Neutrino Time of Flight Metrology

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National Institute of Standards and Technology

SESSION X, MINI 1: Micro-Atomic Clocks

AMIT LAL

Cornell University

WILLIAM RILEY

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SESSION V: Time and Frequency Transfer – Optical Fiber

VLADIMIR SMOTLACHA

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SESSION X, MINI 2: Space-Based Clocks

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SESSION VI: Poster Session

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SESSION XI: Network Synchronization

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