

David Howe Bio

David A. Howe is Leader of the Time and Frequency Metrology Group of the National Institute of Standards and Technology (NIST), Boulder, CO, and the Physics Laboratory's Time and Frequency Division, Boulder, CO. In 1971, he completed undergraduate and graduate studies in physics and math under Neil Ashby at Colorado University in Boulder where he is a faculty member in its Physics Department. His expertise includes statistical phase-noise analysis, digital servo design, automated accuracy evaluation of primary cesium standards, atomic-systems analysis, reduction of oscillator acceleration sensitivity for special applications, communication theory, clock-ensemble algorithms, and spectral estimation using digital processing techniques. From 1970 to 1973, he was with the Dissemination Research Section at NIST (then the National Bureau of Standards) where he coordinated the first lunar ranging and spacecraft atomic-clock time-synchronization experiments as well as TV time experiments, from which evolved closed captioning. He worked in NIST's Atomic Standards Section with David Wineland from 1973 to 1984 doing advanced research on NIST's primary cesium standard and compact rubidium, hydrogen, and ammonia standards. He developed and built the first six operating compact hydrogen masers in 1979 and later returned to the Dissemination Research Section in 1984 to lead and implement several global high-accuracy satellite-based time-synchronization experiments with other national laboratories in the maintenance of Universal Coordinated Time (UTC). For this contribution, he was awarded the Commerce Department's highest commendation, the Gold Medal, in 1990 for implementing two-way satellite time networks resulting in new global synchronization standards. From 1994 to 1999, he succeeded David Allan (of Allan variance fame) as statistical analyst for the Time Scale Group which maintains UTC(NIST) from an ensemble of laboratory atomic frequency standards. David Howe developed the Total and TheoH variances which attain high-accuracy frequency-stability estimation for longer-term than the sample Allan variance and are recommended statistics in the ITU Time and Frequency Working Group. He won a NIST Bronze Medal and a second Bronze in 2012 for Achievements in Time and Frequency Metrology. He received the 2013 IEEE Cady Award and was co-recipient of the 2013 IEEE UFFC Outstanding Paper and 2015 NIST Astin Measurement Sciences awards. He has over 160 publications and three patents in subjects related to precise frequency and phase-noise standards, timing, and synchronization. He is an avid pianist and ham-radio enthusiast.