2011 Distinguished Alumni Award Winner

Friday, April 29, 2011 • 4:00 P.M. • 2241 Chamberlin Hall

Coffee & Cookies Served at 3:30 p.m

Thomas R. O'Brian

National Institute of Standards and Technology (NIST) and JILA

Host: The Department of Physics

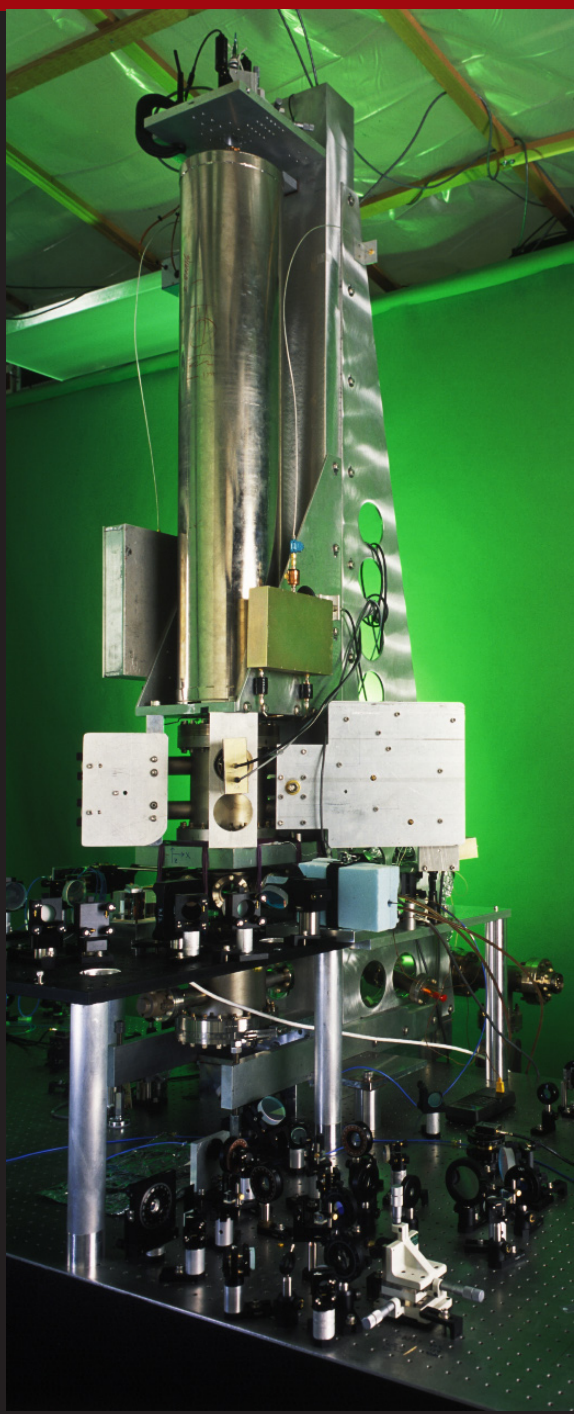
Atomic Clocks

Does Anybody Really Know What Time It Is?

Department of Physics Colloquium

THE UNIVERSITY of WISCONSIN MADISON

Time is the most accurately measured absolute quantity. The world's best atomic clocks at the National Institute of Standards and Technology (NIST) measure time with absolute uncertainties about 8×10^{-18}, the equivalent of one second in 4 billion years. At this precision, relativistic time dilation is evident at jogging speeds or 10 cm changes in altitude. We will discuss how atomic timekeeping underpins a broad range of our technology infrastructure, enables innovative measurements for everything from brain activity to mineral exploration – and how related to atomic timekeeping has stimulated some of the most important advances in atomic and optical physics.



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