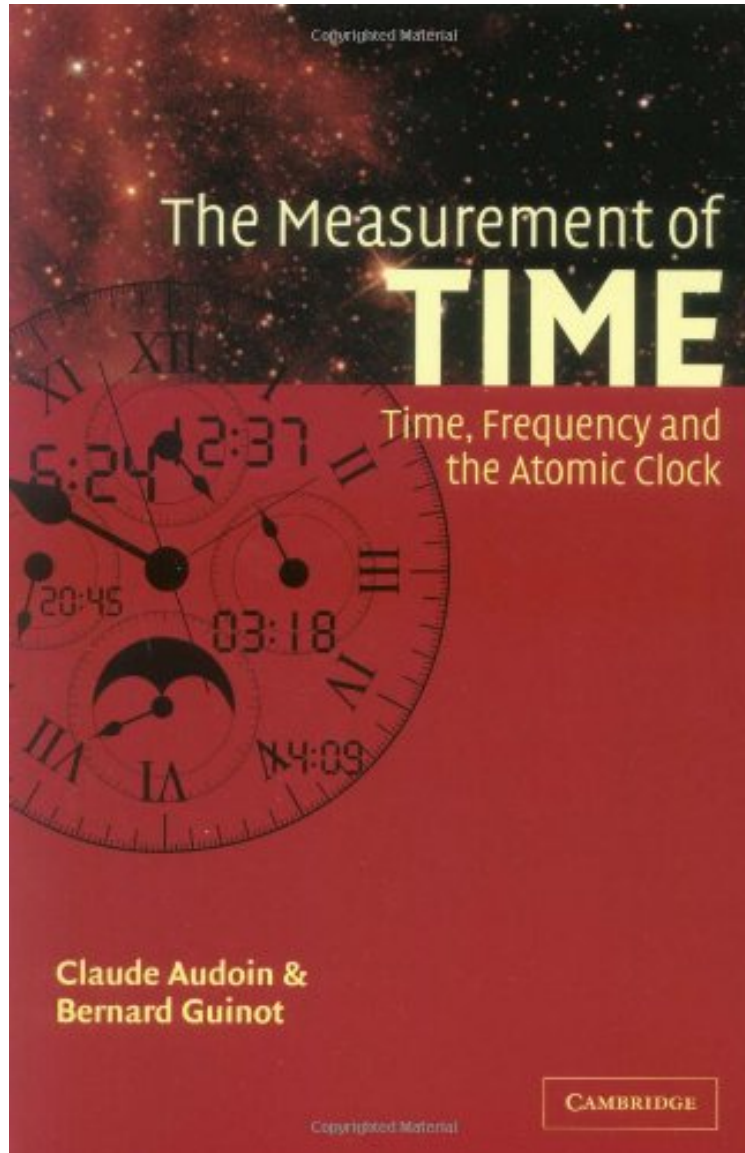


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The Measurement of Time: Time, Frequency and the Atomic Clock

Claude Audoin, Bernard Guinot

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Claude Audoin, Bernard Guinot : The Measurement of Time: Time, Frequency and the Atomic Clock before purchasing it in order to gauge whether or not it would be worth my time, and all praised The Measurement of Time: Time, Frequency and the Atomic Clock:

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comprehensive, with an emphasis on the principles. F. G. Major's book *the Quantum Beat* is a great book too. Best to have both of them. 9 of 9 people found the following review helpful. A Gem in Time! By F. G. Major I found this excellent translation from the original French to be a most authoritative and lucid treatment of the physics and metrology of time on a superior technical level, by two of the most prominent figures in the field. It gives comprehensive coverage of atomic frequency standards including the most recent advances involving cold atoms and trapped ions, such as the cesium "fountain" and mercury ion standards. I consider this book essential reading for anyone with an ambition to become steeped in the field, and offers a more technically sophisticated treatment than is attempted, for example, in a book such as "Quantum Beat".

This volume is a comprehensive introduction to the physics of time and time measurement, from an historical perspective to the modern day. It discusses the stability and accuracy of atomic frequency standards, covering different types of oscillators and atomic clocks, and their uses. The precision of atomic clocks and the atomic time scale are considered in the context of fundamental physical research, with relation to general relativity and applications such as the Global Positioning System. The authors also discuss International Atomic Time and its relationship to Coordinated Universal Time and the time scales used in astronomy.

"Pleasant to read...a good reference..." *Physics Today* "The authors explain atomic and astronomical time in enough detail and interlace enough basic physics to make the information extremely useful to readers who know some basic physics but are otherwise unfamiliar with the accurate measurement of time...The Measurement of Time is pleasant to read, and provides the basic information required for understanding the concepts of time measurement. It should guide the engineer involved in system design in which timing is critical, and should help the graduate student gain insight into the whole field. Finally, the text should be useful to anyone who wants to quickly obtain a general idea of time measurement. It is a good reference to have on one's personal bookshelf." *Physics Today* Jan 2003

About the Author Claude Audoin received his doctorate in physics from the Universit Paris Sud in 1967. He was Director of the Laboratoire de l'Horloge Atomique, Orsay, from 1972 to 1985 and managed research programmes related to hydrogen masers, optically pumped cesium beams, trapped ions, frequency stabilised lasers and frequency metrology. He has published numerous papers on the subject of atomic frequency standards and their metrological properties, and is co-author of a previous book covering the quantum physics of atomic frequency standards. Dr Audoin is also on the editorial board of *Metrologia* and is a member of the Bureau des Longitudes. Bernard Guinot was an officer in the merchant navy before receiving his masters degree in mathematics in 1952. He then joined the Paris Observatory and in 1958 received the Doctorat d'Etat. His research was devoted to fundamental astronomy, space geodesy and the measurement of time, and he is the author of numerous papers on these subjects. From 1964 to 1988, Dr Guinot was Director of the Bureau International de l'Heure, where he was involved in the transition to modern techniques for measuring the rotation of the Earth and the development of International Atomic Time, which is now under the responsibility of the Bureau International des Poids et Mesures. He is a member of the Bureau des Longitudes and the Academia Europaea.