

# 「Frequency Measurement and Control」(Springer)

**2001.1.25**

「Frequency Measurement and Control」

M.Kouroggi, K.Imai, B.Widiyatmako, M.Ohtsu

pp.315-335 “Generation of Expanded Optical Frequency Combs”

A.N. Luiten

Springer

2001.1.25

ISBN 3-540-67694-5

Andre N. Luiten  
(Ed.)

# Frequency Measurement and Control Advanced Techniques and Future Trends



Optical frequency measurement is an extremely challenging field of experimental physics that is presently undergoing a renaissance of interest and endeavor. The motivation for this rebirth comes from two diverse fronts: the very practical needs of modern high-throughput optical communication systems, and from the more esoteric requirements of high-resolution laser spectroscopy. The inherent challenge of the field arises from the desire for accuracy in the measurement. This requirement demands that the optical measurement be made with reference to the internationally agreed definition of frequency: a microwave transition in the cesium atom. In the past, a small number of laboratories had succeeded in providing this bridge between the microwave and optical domains in an outstanding feat of ingenuity, overcoming the limits of technology. A much more elegant and simple approach has now become possible using developments in nonlinear optics and femtosecond mode-locked lasers. Application of this modern approach should lead to a new era in which optical frequency measurements become commonplace.

This text is the first to discuss, in detail, the development of traditional and second-generation frequency chains together with their enabling technology. Reviews written by some of the most experienced researchers in their respective fields address the technology of frequency metrology, including low-noise and high-stability microwave and optical frequency standards, traditional and second-generation optical frequency measurement and synthesis techniques, and optical frequency comb generators. This text should prove useful to researchers just entering the field of optical frequency metrology or equally well to the experienced practitioner.

ISSN 0303-4216



<http://www.springer.de>

