



Atomic clocks: basic principles, applications and current trends

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Abstract

Atomic frequency standards play an essential role as the backbone of the international navigation and timing infrastructure. The lecture will introduce the main components of atomic clocks and explain their basic principles. An overview of their categories and fields of application will also be presented. We will give specific examples of atomic clocks of various types: commercial, laboratory, primary, etc. The general trends of the field will be illustrated, in particular the use of stabilised lasers and optical combs to improve their performances, and the current efforts towards their extreme miniaturisation (Chip Scale Atomic Clocks). Finally, the presentation of selected applications on ground and in space will conclude the lecture.