

Special Issue

Optical Atomic Clocks: Progress, Applications and Fundamental Physics

Message from the Guest Editors

Over the past two decades, rapid advancements in laser technology and cold atom physics have driven remarkable developments in optical frequency standards. The frequency stability and uncertainty of optical atomic clocks now surpass those of the cesium atomic fountain clock by two orders of magnitude; this has triggered a debate and prompted us to launch this Special Issue. Besides metrological applications, optical atomic clocks have already proven to be effective in geodetic evaluations and hold great potential for a wide range of applications in the field of quantum precision measurements and exploration of physics beyond the standard model. These include probing the temporal stability of a fine structure constant, verifying relativistic effects, and searching dark matter and gravitational wave signatures. This Special Issue aims to highlight the latest advancements in the field of optical clocks, covering new developments in theoretical research, experimental techniques, and emerging applications. We welcome the submission of original research articles, comprehensive reviews, and case studies from researchers, academics, and industry experts.

Guest Editors

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