

Advance Attosecond Laser Infrastructure – Toward Optical Frontier for Interdisciplinary Researches

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The emergence and evolution of attosecond light pulses not only broken the shortest time limits, but also provide an unprecedented tool for explore electron dynamics, it exhibits wide applications in materials science, information technology etc. Since we realized the first attosecond pulses with 160 as duration in China in 2013 [1], continuous progresses have been made by improving the experiment systems and driver lasers, the pulse duration was shortened from 86as [2] to 72as. Recently, by using sub-10fs driven laser of central at 900nm generated by optical parametric chirped-pulse amplifier, we further obtained attosecond pulse as short as 59as. Mission to the emerging researches and applications, a national facility-Synergetic Extreme Condition User Facility (SECUF), has been constructed with comprehensive extreme-condition experimental platform integrating ultralow temperatures, strong magnetic fields, ultrahigh pressures, and ultrafast optical fields, which was opened for international users. Furthermore, the Advanced Attosecond Laser Infrastructure (AALI) was launched recent, which aims to multifunctional attosecond and XUV beamlines with application research terminal stations. Driver lasers include Ti:Sapphire, fiber and thin-disk laser as well as OPCPA were developed with high average power, sub-10 fs pulse and tunable wavelengths. In this talk we will report the relevant progress toward a robust and cutting-edge platform for frontier researches.

References

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