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Development of refractive delay stages for application in two-dimensional electronic spectroscopy

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Abstract content
   (Max 300 words)

Two-dimensional spectroscopy is a powerful tool for probing the intermolecular interactions between different transitions of complex molecules or aggregates. It is based on a four-wave mixing technique which involves irradiation of a sample by a sequence of three ultrashort laser pulses, propagating in a phase-matched box geometry, resulting in the generation of a third-order signal that is spatially isolated from the excitation pulses. We present a useful method for controlling the excitation-pulse temporal sequence. Wavelength tunability of the excitation pulses in the visible range is realized by means of a 1 kHz Ti:Sapphire femtosecond laser system and a noncollinear optical parametric amplifier (NOPA). Frequency-resolved optical gating (FROG) is used to characterize these pulses at the sample position. The time delays between the excitation pulses are introduced with subwavelength accuracy by means of glass wedge-based delay stages. Precise calibration of these time delays was achieved using spectral interferometry and the results are reported here.

Apply to be
 consider for a student
   award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
   PhD)?

MSc

Main supervisor (name and email)
and his / her institution

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Would you like to
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No

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