

FREQUENCY-AGILE COMBS: APPLICATIONS IN SPECTROSCOPY AND PHYSICAL METROLOGY

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I will be discussing our recent work on the development and application of frequency-agile optical frequency combs generated with electro-optic modulators. Through the use of an arbitrary waveform generator we are able to digitally control the resulting frequency comb and then employ it in a self-heterodyne configuration in which we can exploit the common-mode nature of the probe and local oscillator beams for facile coherent averaging. Importantly, this approach allows for complete control over the comb tooth spacing, down to the 100's of Hz level for ultrahigh resolution measurements. We have recently applied these approaches to atomic spectroscopy as well as for physical metrology using optical microcavities, areas in which the agility and resolution of these frequency combs are ideally suited.