

## ELECTRO-OPTIC FREQUENCY COMB GENERATION WITH PHASE-LOCKED LOOP STABILIZED RF MODULATION

TODD ELIASON, PAYTON AVERY PARKER, MELANIE A.R. REBER, *Department of Chemistry, University of Georgia, Athens, GA, USA.*

Electro-optic frequency combs are attractive light sources for dual comb spectroscopy because they are turn-key, robust lasers. The EOM comb presented in this work has a novel architecture, utilizing multiple modulators, to optimize spectral bandwidth with MHz comb tooth spacing. The repetition rate is dictated by the final EOM operating at 70-150 MHz, which matches many commercial mode-locked ultrafast laser systems. Each frequency source is phase and frequency locked using a phase locked loop, which offers long term stability without optics. The frequencies can be tuned without any change to the optics or electrical hardware. The comb tooth linewidth is controlled by the seed laser, a commercial Nd:YAG with a kHz linewidth. Integration of this laser into a dual comb spectroscopy experiment will also be discussed.