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Resolving Spectral Congestion in Time-Resolved Surface-Enhanced Coherent Raman Signals using Compressed Sensing CHUANHONG LIU, Xi'an Jiaotong University, Xi'an, Shannxi, China 710049, DMITRI VORONINE, MARLAN SCULLY, Texas A&M University, College Station, TX 77845, IQSE TEAM — Experimental noise often limits spectral and temporal resolution in coherent nonlinear optical spectroscopy. For example, in time-resolved surface-enhanced coherent anti-stokes Raman scattering (SECARS) spectroscopy the spectral resolution increases with a decreasing size of the pulse shaper slit but the signal-to-noise ratio decreases [1-3]. The theoretical limits of resolution in time-resolved CARS have previously been discussed [4]. We apply the compressed sensing (CS) technique to improve data analysis and to reach the theoretical spectral resolution in noisy SECARS signals.

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