

Abstract Submitted  
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**Optimizing coherent anti-Stokes Raman scattering by genetic algorithm controlled pulse shaping**<sup>1</sup> WENLONG YANG, ALEXEI SOKOLOV, Institute for Quantum Science and Engineering and Department of Physics & Astronomy, Texas A&M University, College Station, TX 77843-4242 USA — The hybrid coherent anti-Stokes Raman scattering (CARS) has been successful applied to fast chemical sensitive detections. As the development of femto-second pulse shaping techniques, it is of great interest to find the optimum pulse shapes for CARS. The optimum pulse shapes should minimize the non-resonant four wave mixing (NR-FWM) background and maximize the CARS signal. A genetic algorithm (GA) is developed to make a heuristic searching for optimized pulse shapes, which give the best signal the background ratio. The GA is shown to be able to rediscover the hybrid CARS scheme and find optimized pulse shapes for customized applications by itself.

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