

Announcing the Final Examination of Connor Kelly for the degree of Masters in Physics

Date: April 8, 2021

Time: 9:00 a.m.

Zoom Link: <https://us04web.zoom.us/j/74556069489?pwd=YXh4TWw1MGRtZG1lOHNubjE1ZnIJZz09>

Meeting ID: 745 5606 9489

Passcode: A0X3BZ

Dissertation title: Dual Beam Frequency Comb FTIR Spectroscopy

Abstract:

A visible and Infrared (IR) range dual beam frequency comb Fourier transform spectrometer was developed. Using dual mode locked Ti:Sapphire lasers a comb-interferogram was generated in the visible range. This spectrum was calculated and used to measure the transmittance of a Nd-doped crystal. The system was further developed to generate an IR interferogram by Difference Frequency Generation (DFG) using a GaSe crystal placed in the mode-locked pump beam. Numerical work was done to calculate the expected DFG spectrum confirming the necessary IR range can be reached. This has been conducted in support of an IR holographic spectroscopic microscopy spatial and spectral resolving platform for applications in cell biology and biomedical applications.

Outline of Studies:

Major: Physics, Optics Track

Educational Career:

B. S. University of North Florida, USA, 2018

B. S. University of North Florida, USA, 2016

Committee in Charge:

Dr. Christopher Bennett (Chair)

Dr. Konstantin Vodopyanov

Dr. Walter Buchwald (External Committee Member)

Approved for distribution by Dr. Christopher Bennett, Committee Chair, on March 17, 2021.

The public is welcome to attend.