

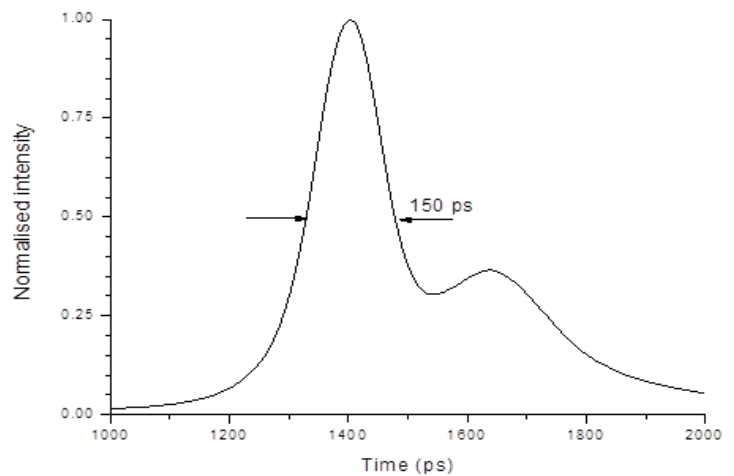
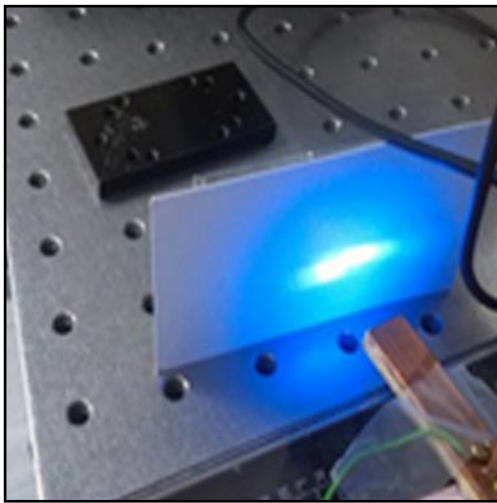
## Physics Final Year Projects 2017

Brian Corbett, III-V Photonics Group, Tyndall National Institute

### Project I: Measure the speed of light on a benchtop

Light travels 30 cm in 1 ns

Laser and Superluminescent LEDs: Capable of producing very short optical pulses (<200ps - 6cm trace) which allow for precise measurement of time



#### Steps:

- Design and build a setup to measure the speed of light
- Generating sub-nanosecond optical pulses with a laser
- Detecting light with a Geiger mode photodetector
- Student becomes familiar with operating high speed oscilloscopes, electrical pulse generators, III-V semiconductor devices and optical alignment

### Project II: Modal characteristic of lasers by spectra

Use labview to measure the angularly resolved far-field spectra

- as a function of waveguide widths
- as a function of current (cw and pulsed)
- from a range of lasers types

Analyse spectra

Calculate lateral mode

- Identify emergence of high order modes and match to experiment