Plan of Action (12th Oct)

Equipment Available:
- 2x ThorLabs -45 to +90 degree polarisers
- 2x ThorLabs 0 to 45 degree polarisers
- 2x BNC photodiodes
- 4x ThorLabs photodiodes
- 1x Oscilloscope
- 1x BNC Laser Diode
- 2x ThorLabs Laser Diode
- 2x ThorLabs polarising beamsplitters

Possible Extensions (Pleasing for Tom):
- "Fidelity of information transfer" - whatever that is
- Minimum resolvable laser pulse width (in time), with errors
  Used to determine maximum data transmission rate
  Determine if laser, diode, or scope is limiting factor
- Quantify bias on photodiodes (i.e with and without curtain)
- Explore options for electronically controlling polarising filter
  e.g. liquid crystal, polarisation modulator
- Mathematical derivation of probability of photon resolving onto
  the wrong basis/axis (even in 0 basis, recorded in 0 basis, if any
  polarisers are incorrect, the photon will be resolved wrong)
- Experimental/classical test - ratio of voltages on photodiodes
  proportional to ratio of single photons correctly or incorrectly
  resolved
- Application of above to QKD - probability of shared keys being
  unequal despite no eavesdropper
- Best laser frequency/wavelength to use?
- Is there a QKD protocol that has the highest chance of correctly
  transmitting the info
- Computer simulation of any models we make