Kwiat

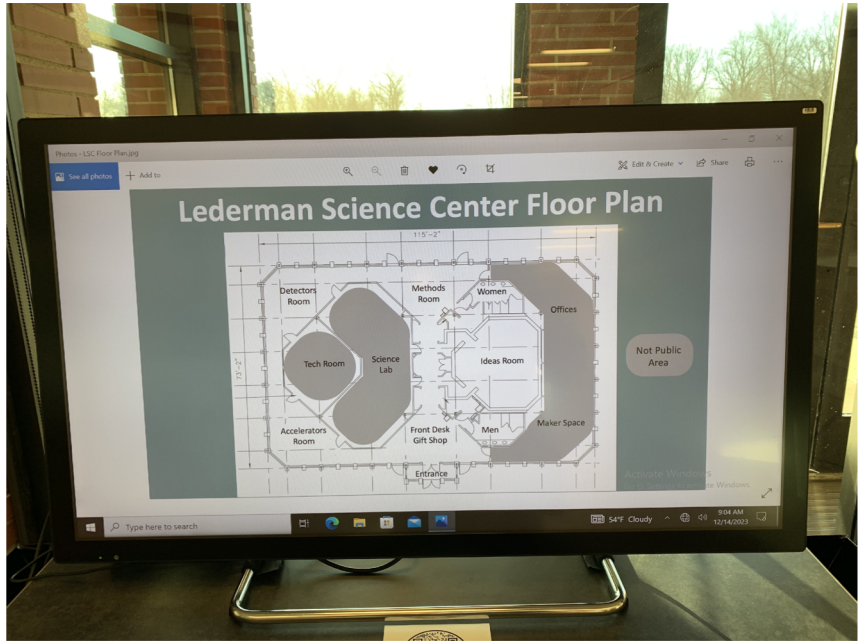
Quantum Information

Group

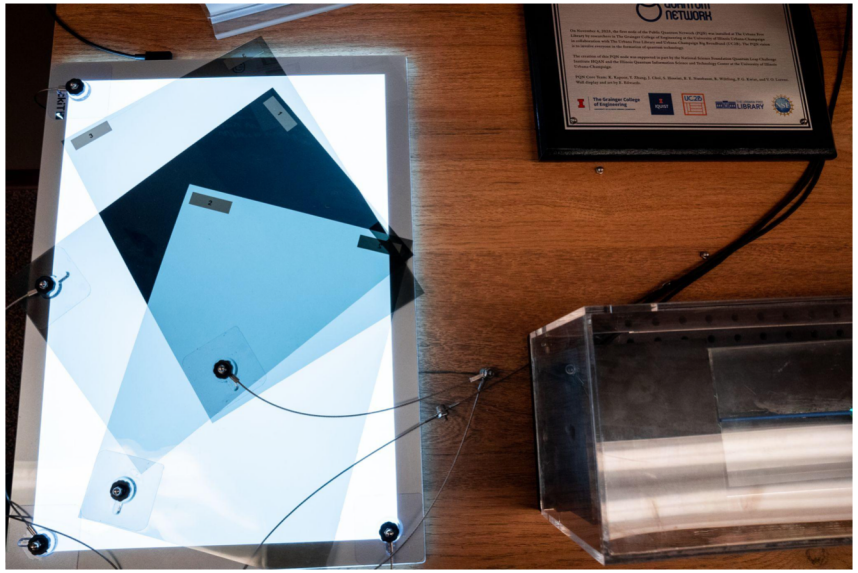
PQN

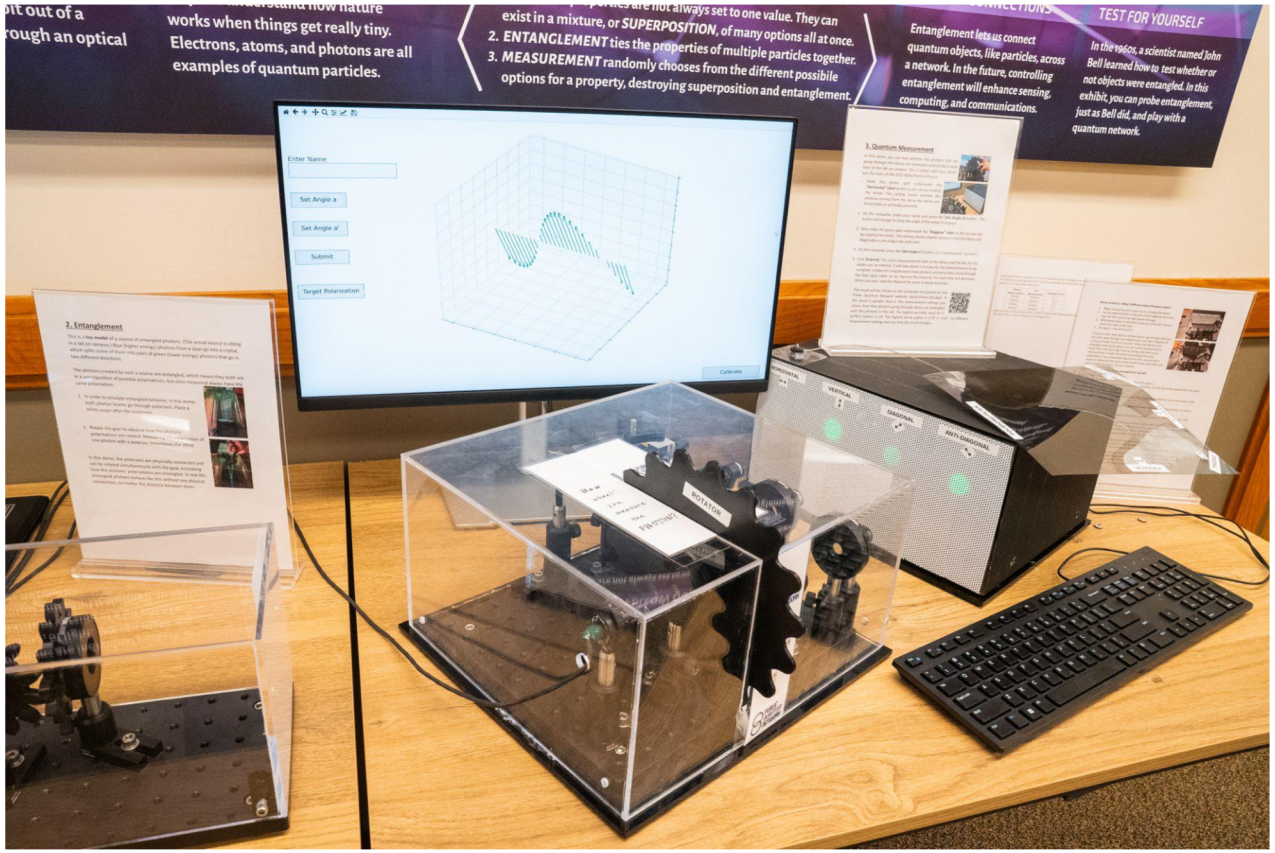
PQN @ Fermilab

- Toured Lederman Science Center after all-hands meeting
- Met with Ketevan Akhobadze and Luis Mendoza
  - Preliminary discussions on setups
  - Saw network closet, other interactive displays

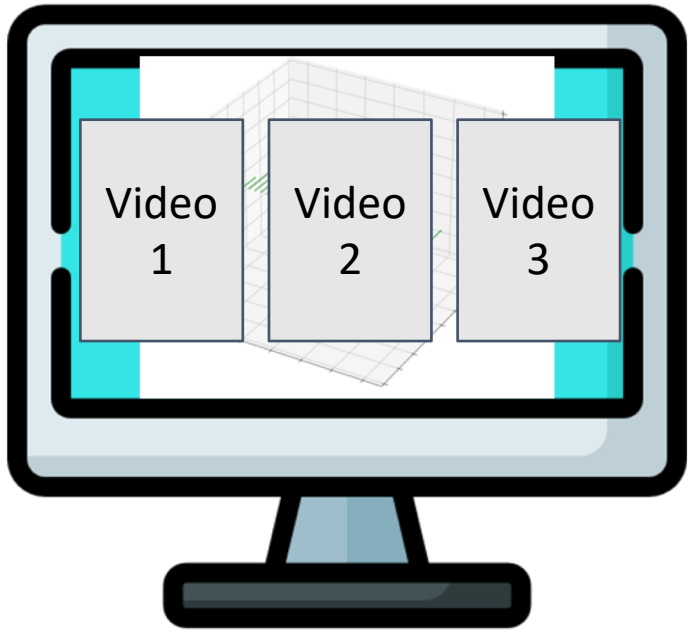


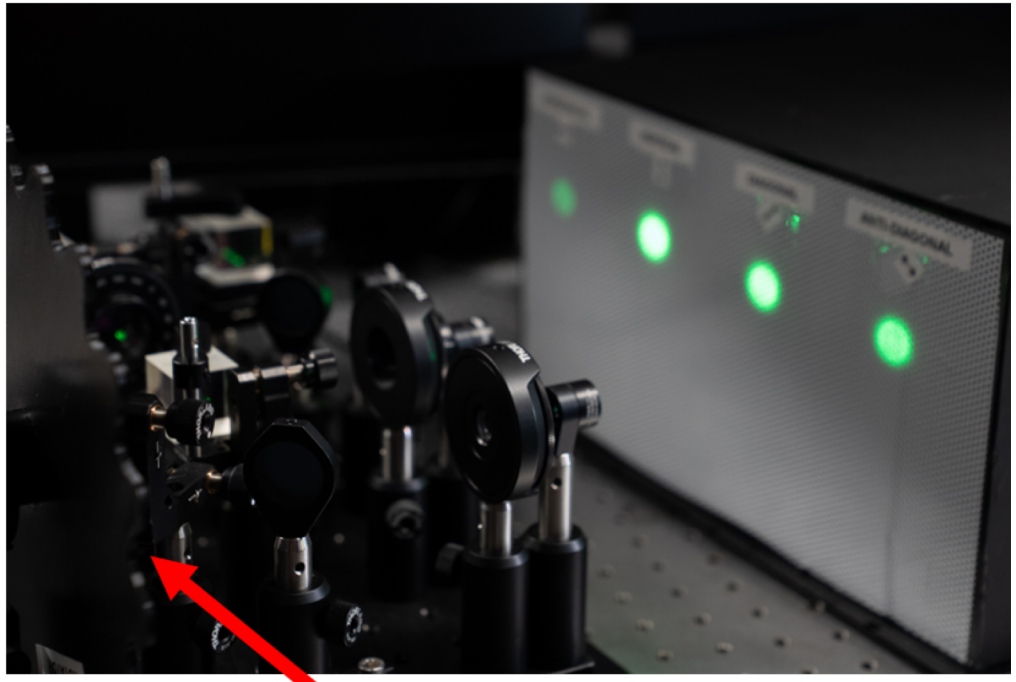
Public Interaction Setup at Urbana Free Library





Public Interaction Setup at Urbana Free Library





Sets the Measurement Basis 1

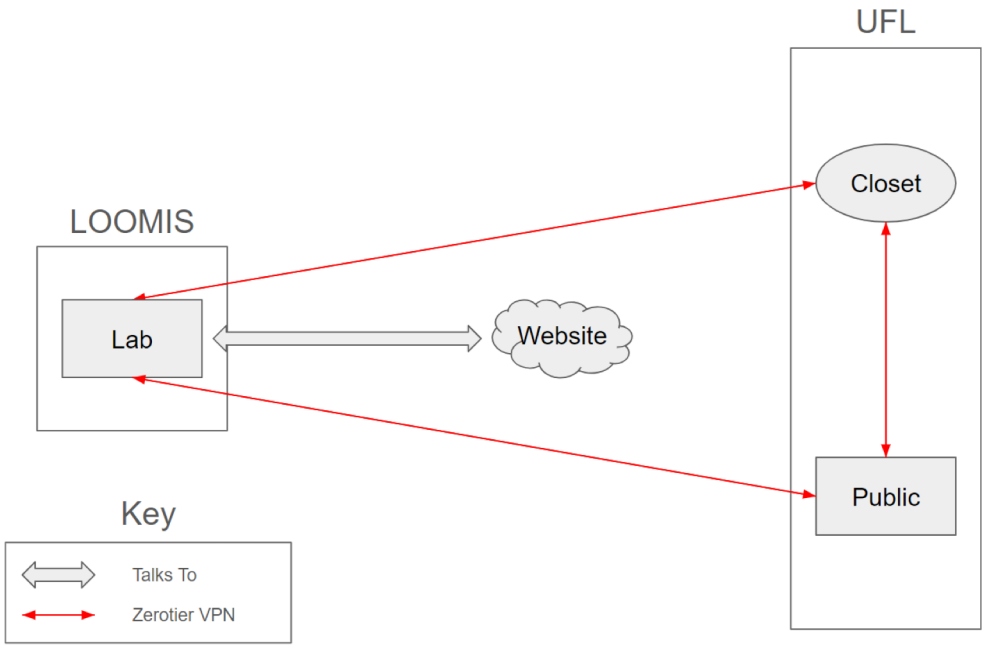
Sets the Measurement Basis 2

Sends the Measurement Request

Rotates the Wheel

UFL Installation

- We have installed a new projection measurement system in the library network closet
  - Additional QWP for new CHSH measurement scheme
- New communication system in the works with Raspberry Pis



CHSH Measurement System

- Both Loomis and UFL have QWP + HWP to do a full tomography
- Every few hours (~3) we do a full state tomography
- We have code which allows us to find the optimal basis angles at Loomis and UFL to give the maximum CHSH violation
- We also map user selected basis angles using the state tomography data

Future Steps

- Finish communication system for UFL
- New CHSH measurement scheme
  - Performs state tomography
  - Maps basis selections to QWP and HWP based on tomography, bypassing need for active polarization corrections
- These changes to the UFL system will guide us in creating Fermilab system