



U.S. DEPARTMENT OF
ENERGY

Office of
Science

Status of CLARA apparatus

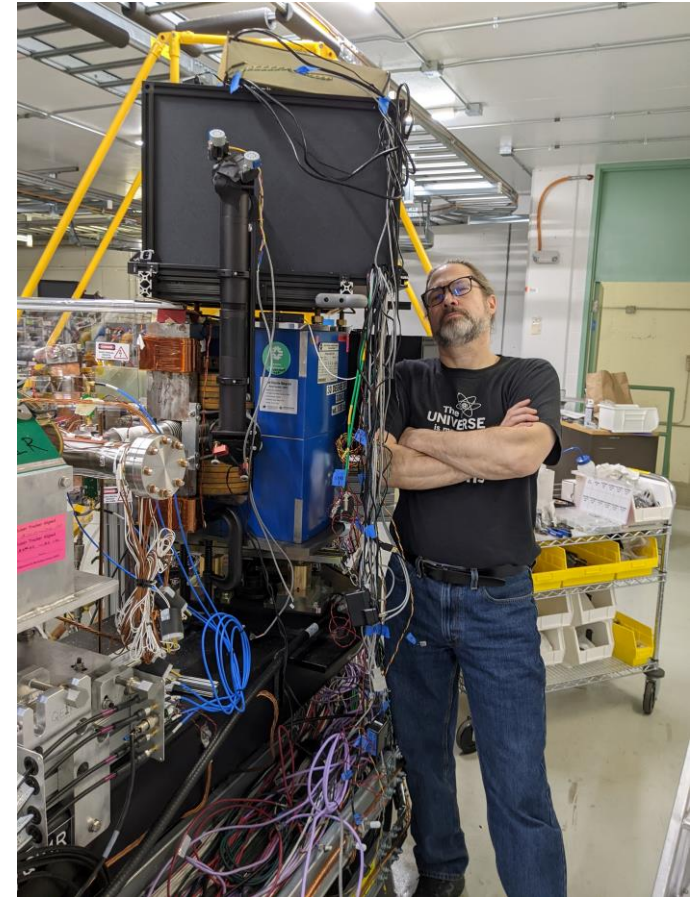
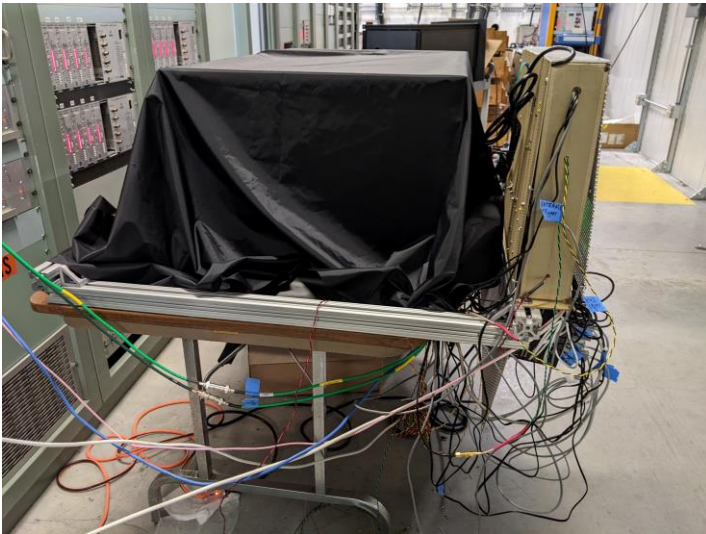
A. Shemyakin

Meeting on CLARA

3 February 2023

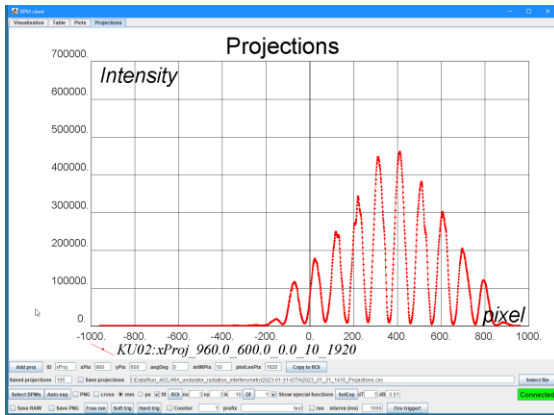
Move to IOTA

- The apparatus was moved to IOTA on 23-Jan-23, then connected to electronics



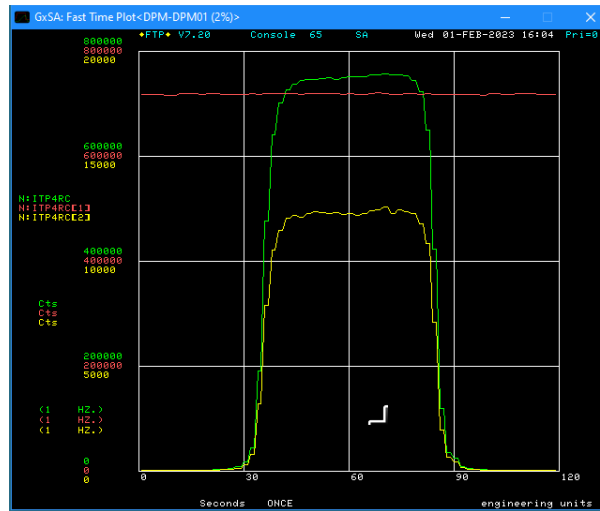
MZI is fully operational with the laser diode

- The laser diode is installed without filters
 - Allows to work with camera in mA range and with SPADs in μA
 - Need to change the resistor in series at ESB
- SPADs are aligned, interference pattern observed

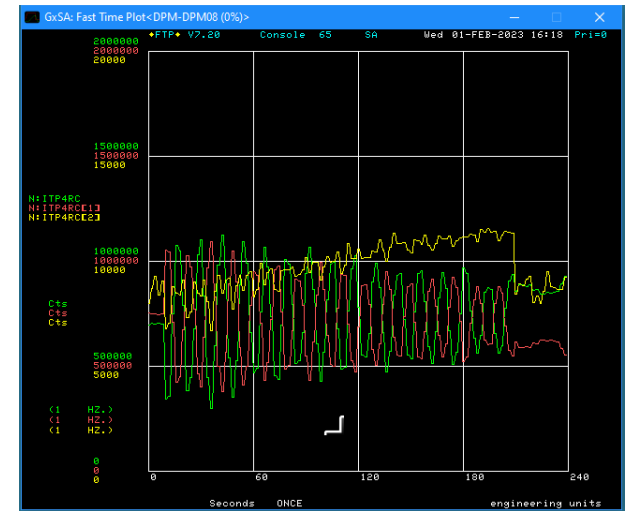


Projection on the horizontal axis. 31-Jan-23.

LD current is 25.6 mA.
Visibility changes dramatically from projection to projection.



SPAD1 rate (green) changes when its horizontal position is changed linearly in time. LD current is $\sim 30 \mu\text{A}$. 1-Feb-23.



SPAD1/2 rates (green/red) vs stage position. LD current is $\sim 30 \mu\text{A}$. 1-Feb-23.

Status

- Ready to start measurements with the undulator light
 - Will need first to align the light into the MZI
 - The first measurement is with a high-intensity beam with light directed to camera
 - Then proceed toward single- electron measurements with SPADs
- There are multiple indications of increased vibrations
 - Need to quantify and try addressing this