BNL report

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news

• Collaboration with Florida International University
  • Group of Prof Shamim Shawkat, SPAD expert
  • Grad student Shante Hicks will work on testing superSPAD at BNL

• Workshop of Stellar Intensity Interferometry in Columbus OH
  • Great interest to spectral binning with 10-100 ps time resolution
  • QUASAR project, Roland Walter (U Geneva) & EPFL, et al; overlap in science and sensor design, discussions in progress

• Workshop on Quantum Telescopy, June 18th, Denver CO

• Close to resume on-sky benchmarking with new telescope optics, including AO
From the lab – so far:
Ne 703 nm line, polarized: HBT peak
Dual spectrometer

- Can see two Ne spectra
- Chasing spectral resolution
  - Increased scale, now 20 pix/nm → 13 nm range for 256 pixels
  - Neon 693 and 703 nm lines

Currently verifying TDC calibrations, rates, alignment and spectral resolution
Next step: broadband HBT

• Each spectral line is a separate experiment

• So far demonstrated HBT without spectrometer

• Step 1: interfere neon lines

• Step 2: interfere spectral bins, this is what we need for quantum-assisted astrometry

• Need larger range and two stations → setup with 512 pixels then setup with two boards
superSPAD

4-channel sensor
7.5 ps FWHM
superSPAD

• all in new lab in Physics
• next
  • Characterize with SPDC source
  • Use in free-space setup, need 4 channels

\[
P(cg) = P(dh) = (1/8)(1 + \cos(\delta_1 - \delta_2))
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\[
P(ch) = P(dg) = (1/8)(1 - \cos(\delta_1 - \delta_2))
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