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Carolina plan for engagement with TOP electronics

- Initial objective: Understand unexpectedly high level of noise at the output of the amplifiers on the carrier cards.
- Mock PMT pulses to be inserted via the front-back board.
- PMT inputs to the amplifiers have a duration of order 1.0 ns and rise time of order 0.1 ns.
- Instrumentation on hand at Carolina is not fast enough to examine such signals. We will need to buy or borrow new instruments (pulser, ‘scope).
- We have identified oscilloscope candidates:
  - Tektronix MSO5000 / DPO5000 - 2 GHz, 175 ps rise time ~$40K
  - Agilent DSO81004B/001 10 GHz 4ch 40GSa/s ~$20K on eBay

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- We (Carolina) do not know the frequency spectrum of the noise. Could it be low frequency? Is it *a priori* clear that gigahertz instrumentation is necessary for the noise study?
- Most immediate hardware needs at Carolina:
  - From Hawaii:
    - Front-back board
    - Two carrier cards
    - Ancilliary stuff necessary to operate the carrier cards
- Other immediate needs:
  - Also from Hawaii: document (email?) explaining methodology of noise assessment used so far.

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- On a longer time scale we understand that we should learn to examine all of the pertinent features of amplifier performance for multiple channels and to automate this process.

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Questions

- Do we need to quantify variation in pulse time (relative to trigger) and area?
- Are there requirements on source resistance and capacitance?
- Is there a need for us to get a preamp (A250 style) that can handle charge as low as 100 fC – just to play with? (We could use a Belle II carrier board instead.)