

# ToroidMeeting-Apr-12-06

## Toroid Electronics Meeting Minutes, April 4, 2006

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### Attendees:

Steve Smith	John Dusatko	Tim Montagne
Hamid Shoaee	David Dowell	Sheng Peng
Mike Browne	Arturo Alarcon	Stephen Norum
	Michael Cecere	

### Agenda:

1. **Injector Install Solution:** What circuitry will be ready for Injector Install?
2. **System Architecture:** Imaging requirements? MPS EPICS dependency?

### Action: (summary; see details below)

1. **M. Cecere** Pursue an Analog Electronics solution for Injector Install.
2. **M. Cecere** Determine MPS requirements, Interim and Permanent.
3. **D. Dowell** Send revised Toroid specifications to M. Cecere
4. **M. Cecere** Investigate network BW options for sending video/waveform data (from waveform imaging) back to MCC.
5. **M. Cecere** Develop ESD based on Analog Interim Solution for next week

### Minutes:

1. **Discussed Digital FPGA/DSP Design**
  - a. Has many nice features:
    - i. Beam Charge Determination
    - ii. EPICS Independence for MPS signal generation
    - iii. Complete waveform imaging capability
  - b. Steve thought this project could be done in 6 months, if enough resources were dedicated. This was judged risky at this time.
2. **Pre-Amp might not be needed at all**
  - a. it was briefly mentioned that the pre-amp can be eliminated from this design and it's functions (calibration pulse generation, possible pulse stretching/conditioning) can be subsumed by the electronics board itself.
3. **MPS Requirements**
  - a. Comparator mode and Single Toroid modes both needed.
  - b. Need independence from EPICS processing for reliability.
    - i. This requires remembering MPS threshold values in case the host IOC locks-up.
    - ii. and a watchdog timer so Toroid board can notify MPS of problem.
4. **Imaging Requirements, Still needed for Toroids?**
  - a. If toroid designed to spec, it should provide a recoverable image of the dark current pulse.
  - b. Dave says this requirement can be dropped for toroids, will rely on Faraday cups for imaging needed during tune-up and diagnostics.
  - c. Therefore, Imaging requirements still needed for Faraday cup.
    - i. can be supplied by an analog signal tap that can be fed to an o-scope or digitizing card for readback over the network.
    - ii. need to investigate network BW options for sending imaging data (video signals, digital waveform data...) back to MCC for remote observation.
5. **Interim Analog-based Solution**
  - a. can still supply imaging requirements
  - b. MPS signal generation needs made much more difficult without the presence of digital electronics on board. adding digital electronics complicates project timeline.
    - i. relax MPS requirements for Interim, injector install solution?