

Subject: Michigan's 2013 R&D funds need to NSW trigger electronics design work

From: "Zhou, Bing" <bzhou@umich.edu>

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To: Vinnie Polychronakos <polychronakos@bnl.gov>

CC: "Chapman, J" <umjwc@umich.edu>, "Zhu, Junjie" <junjie@umich.edu>, "Chapman, J" <umjwc@umich.edu>, "Zhou, Bing" <bzhou@umich.edu>, Steve Ahlen <ahlen@bu.edu>, Frank Taylor <fet@lns.mit.edu>

Dear Vinnie,

This message is to respond your message for the minimum R&D funds need at Michigan in 2013 for NSW trigger electronics development.

Our 2013 R&D work for NSW trigger development will focus on the following areas:

- (1) Simulation of the sTGC trigger rate, signal shape, and TOF pattern across strips.
- (2) Setup a small sTGC chamber test station including BNL frontend readout, DAQ system, and trigger system for testing with cosmic-rays.
- (3) Examine the Verilog or VHDL trigger algorithms in the test station.

Our minimum cost estimate for FY2013 NSW trigger electronics R&D estimate is \$130,000, which include support for 0.55 FTE physics engineers (0.5 FTE support for J Chapman, and 0.05 FTE support for Bob Ball), one engineering student (Liang Guan), a minimum travel support request for four trips to cern and BNL by engineers for design and coordination meetings and workshops. In addition, we include a minimum support request to setup an sTGC test station at Ann Arbor. A breakdown of the total R&D request, \$130,000, is described below:

- 1) The total manpower support request is \$103,238, which includes \$67,334 for engineer support (0.55 FTE) and \$35,904 for an engineer student support. The cost listed includes benefit and indirect cost (26% off campus rate).
- 2) The total travel support request is \$15,120, which also includes indirect cost (26%).
- 3) The total sTGC test station setup and operation costs (mainly for gas purchase) in the budget is \$11,642. We plan to use as much as possible the existing HV/LV power supplies, and other lab equipment. The requested funds here are for sTGC chamber and associated electronics/DAQ only.

Bing, J, and Junjie