

Parasitic Beam Test Request

Todd Averett, Bogdan Wojtsekhowski, Update Dec 5, 2011

We request permission to install and operate a prototype Cherenkov detector and DAQ test stand in Hall A during the upcoming Feb-May 2012 run period. This detector prototype will be tested in preparation for the design and construction of a full-scale detector for use in the modified BigBite spectrometer in experiment E12-06-122 in the 12 GeV era. We wish to install on the beam left side at approximately 55 degrees where there is an unobstructed view of the target according to the drawings of Jixie Zhang.

For the parasitic test, we have identified an 8-foot tall steel stand that is movable on casters that is sufficient for supporting and positioning our detector at beam height. This stand is now located in Hall A.

A pre-prototype detector and DAQ system has already been assembled and is currently being tested in Hall A using cosmic rays. This DAQ system will ultimately be used with a newer prototype detector for the beam test. This detector will consist of an aluminum box with an array of 81 PMT's and a single mirror. The radiator will be C_4F_8O gas at a pressure of 1.5 atm psig. The overall size of the box is approximately 3' x 2' x 1' and will weight under 200 lbs. All of the necessary instrumentation, hardware, materials and supplies will be provided by the College of William and Mary. The PMT's and some electronics have been provided by Bogdan Bogdan Wojtsekhowski of Jefferson Lab. Our group will provide all necessary manpower during all phases of this test and subsequent analysis.

We expect there will be no direct impact on the running experiments as we will have a free-standing detector and DAQ system. We make no specific requests for the beam parameters or run time. We request minimal support from the Hall A technical staff for installation of the detector onto the support stand. We also request their support to ensure the test assembly meets Jefferson Lab and Hall A safety standards. Particular attention will need to be paid to providing safe access to the detector on top of the tall stand. We anticipate that no shielding will be needed for the electronics rack due to the low luminosity of the running experiments.