

Abstract Submitted
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Diagnosing Recent Failures In Hodoscope Photomultiplier Tube Bases For FNAL E906¹ HALEY STIEN, Abilene Christian University, SEAQUEST COLLABORATION — The E906/SeaQuest experiment at Fermi National Accelerator Laboratory is researching the nucleon quark sea in order to provide an accurate determination of the quark and anti-quark distributions within the nucleon. By colliding a 120 GeV proton beam with a set of fixed targets and tracking the dimuons that hit the detectors, it is possible to study the quark/anti-quark interaction that produced the unique dimuon through the Drell-Yan process. However, E906 recently began to experience a number of failures in the Hodoscope Photomultiplier Tube bases in the first two detector stations, which are used in the trigger. It was known that the two most likely causes were radiation damage or overheating. Radiation damage was able to be ruled out when it was found that there was no increase in the number of base failures in high rate areas. It was clear that the heat generated on the custom high rate bases caused several components on the daughter cards to slowly overheat until failure. Using thermal imaging and two temperature probes, it was observed that the components on the daughter cards would reach temperatures over 100 degrees Celcius very quickly during our tests. This presentation will discuss the diagnostic process and summarize how this issue will be prevented in the future.

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