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Implementing a Java Based GUI for RICH Detector Analysis ANDREW LENDACKY, ANDREW VOLOSHIN, FATIHA BENMOKHTAR, Duquesne University — The CLAS12 detector at Thomas Jefferson National Accelerator Facility (TJNAF) is undergoing an upgrade. One of the improvements is the addition of a Ring Imaging Cherenkov (RICH) detector to improve particle identification in the 3-8 GeV/c momentum range. Approximately 400 multi anode photomultiplier tubes (MAPMTs) are going to be used to detect Cherenkov Radiation in the single photoelectron spectra (SPS). The SPS of each pixel of all MAPMTs have been fitted to a mathematical model of roughly 45 parameters for 4 HVs, 3 OD. Out of those parameters, 9 can be used to evaluate the PMTs performance and placement in the detector. To help analyze data when the RICH is operational, a GUI application was written in Java using Swing and detector packages from TJNAF. To store and retrieve the data, a MySQL database program was written in Java using the JDBC package. Using the database, the GUI pulls the values and produces histograms and graphs for a selected PMT at a specific HV and OD. The GUI will allow researchers to easily view a PMT's performance and efficiency to help with data analysis and ring reconstruction when the RICH is finished.

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