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**Time Resolution Study for CLAS12 Central Time-Of-Flight Detector** ANTONIA KEUTZER, ZACHARY WEST, George Washington Univ, VITALY BATURIN, GEGHAM ASRYAN, Jefferson Lab, JEFFERSON LAB TEAM — The structure of the JLab CLAS12 central-time-of-flight (CTOF) detector requires the use of photomultiplier tubes (PMT) for an accurate ( $\sim 60$  ps) time resolution measurements. The R2083 PMTs used for the CTOF have been modified with a stabilized voltage divider that allows stable performance at high rates and/or gains. The gains of the unmodified PMTs linearly increase with current, up to  $\approx 400 \mu\text{A}$ , where they drop steeply due to a large charge buildup on the last dynode of the PMT accelerating ladder, resulting in a dampening of the electric field in the PMT. From our tests, we saw that the gains of the modified PMTs remained almost constant up to 200-300  $\mu\text{A}$ . Beyond these they show a similar behavior to the regular PMTs. The modified PMT with the stabilized gain will result in better time resolution measurements at fluctuating count rates, as long as the current in the PMTs is within the range specified previously.

Antonia Keutzer  
George Washington Univ

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