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C3Po1A-02 [23]: The new dynamic synthesis PID control for the 1.3 GHz LCLS-II Cryomodule test at Fermilab

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The 1.3GHz LCLS-II Cryomodule (CM) has 8 cavities and each cavity has 9 RF cells and a 50W heater. The 1.3GHz LCLS-II CM is 12.2-meter-long and contains a total 241.3 liters (equivalent liquid) of liquid helium, which is filling up by the 4KW@2.0K cryogenic plant at the Fermilab Cryomodule Test Facility (CMTF). A new dynamic synthesis PID control of 2K cryogenic control system is built to control the large time-lagged unstable CM cryogenic system, under different modes operations. A report on the results obtained from the dynamic synthesis PID control algorithm in the CMTF 1.3GHz CM test will be presented.

Index: large time lagged, unstable cryogenic control system, new dynamic synthesis PID control algorithm

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