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Online monitoring of the ADS test cryomodule cold mass with WPM

IHEP are taking effort to design the ADS (Accelerator Driven Sub-critical System) injector-I. In order to gain enough experience, a test cryomodule is designed to do all the relevant system joint test. The working temperature is 4K, because the cold mass contraction, it is a great challenge to preserve the alignment precision after such a big range temperature drop. So wire position monitors(WPM) is used to monitor the contraction change process in test cryomodule. The WPM is precisely calibrated. Before the commissioning, we ran a whole helium test. The contraction data and temperature data was combined to calculate the contraction coefficient of the girder system, then was compared with the thermal coefficient of stainless steel, the data matched very well. After commissioning, two thermal cycles data was recorded. The contraction's stability and reproducibility is very good. The average contraction of the two cavities and solenoids is about 1.35mm. These experiment results can be further used to realize better alignment work for the follow cryomodules.

Summary

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