Summary Report of the Meeting on the Noise Issues of the BESIII MDC

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**Participants from the project team:** Gianluigi Cibinetto, Giulio Mezzadri, Michela Greco, Qun Ouyang, Mingyi Dong, Yunhua Sun, Jing Dong, Liangchenglong Jin, Zhi Wu, Linghui Wu, Gong Wenxuan, Xiaolu Ji, Liangliang Wang, Fei Li, Yinhong Zhang, Dai Hongliang, Si Ma, Tingxuan Zeng

On December 2nd, 2024, the Experimental Physics Division organized an expert discussion meeting to address the noise issues in the upgrade of BESIII inner drift chamber, with the Italian project team participating in the meeting. The meeting took place in the BESIII control room. Mingyi Dong, on behalf of the project team, first introduced the current noise issues in the stepped part of the outer drift chamber and the tests in the past two weeks, outlining possible noise propagation pathways. After discussions among the expert group regarding the preliminary experimental test results, it was confirmed that the noise source was closely related to the CGEM detector. To solve the noise issues, the proposed solution is as follows: First, completely remove all the patch cards of the CGEM detectors which are mounted on the preamplifier “towers” of the MDC, and then conduct noise testing experiments. Next, the Italian group need to design shielding covers to fully shield the patch cards when they are reinstalled, while the Chinese group also need to consider improving the shielding for the preamplifiers in the stepped part of the MDC. This solution was unanimously approved by all the experts, who agreed it was the clearest and most feasible option.

The expert group also recommends that the Italian group quickly finalize the removal plan and required time, and provide complete design drawings of the shielding covers, while the Chinese group would provide full support in the manufacturing of the shielding covers and dismantling and reinstalling of the CGEM patch cards.