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MMC development for the AMoRE project

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We present the progress on the MMC development to be used in the AMoRE project. AMoRE used MMCs as the main readout technology for heat and light detection. The MMCs sensors was first developed based on a gold alloy with 1000 ppm Er. The size of the AuEr sensor material was determined to optimize signal size in the heat channel having a large crystal absorber of about 100 cm^3 . Since the measurement is carried out in 10-20 mK, silver based MMC is advantageous in terms of heat capacity in the temperature region. We compared the signal amplitudes of two detector setups with gold foil absorbers in the same size but different sensor materials of an AuEr (1000 ppm) and AgEr (400 ppm). The AgEr sensor resulted in larger signals below 30 mK. Moreover, in the light channel, the size of the AgEr sensor was varied to optimize the light channel with 2inch Ge or Si wafers. We will summarize the test results with four different sizes of AuEr sensors together with Ge wafer in the same size.

Less than 5 years of experience since completion of Ph.D

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