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C2Po1C-01 [13]: Research on the flow resistance of the J-T orifice of space 4K hybrid J-T cooler

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Hybrid J-T cooler has been the most commonly used 4K cryocooler in space detectors. Although resistance of the J-T valve deeply affects the performance of the J-T cooler, few researches have been down especially on the J-T orifice. Because the J-T process is quite complicate, the dimensionless resistance coefficient is defined and deduced using dimensional analysis method to evaluate the pressure drop of the J-T orifice. Then, experimental research is carried out and a series of J-T orifices are experimentally tested. Then, the experimental correlation equations of the resistance coefficient at 4.2K are achieved based on the results of dimensional analysis and experiments.

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