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## **C1Po1A-04 [21]: Design and Experiment Study of Cryogenic Helium Turbine Expander**

*Monday, July 22, 2019 9:00 AM (2 hours)*

Cryogenic helium turbine expander is a core component of large helium refrigerators and liquefiers. Two-stage cryogenic helium turbine expanders are designed for 250W@4.5K helium refrigerator. One-dimensional design have been done based on the parameters calculated by the process. According to the geometric parameters calculated by the one-dimensional design, a new modeling method is adopted to design the blade shape of the expander. The two stage turbine expander are successfully applied to 250@4.5K helium refrigerator, and the efficiency of the two expander are higher than 65%.

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