



## Cryogenics Operations 2018

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# Numerical simulation study on the static performance of a gas bearing for the helium turbo-expander

As the heart of cryogenic refrigerators, the helium turbo-expander affects the stable operation of cryogenic systems. The supporting component of the turbine is bearing, the mechanical properties of which are directly related to the reliability and safety of the turbine. For the helium turbo-expander, the operating speed is high and the temperature of the working wheel is low. So it is necessary to choose the gas bearing, which has the performances such as light, non-polluting and cryogenic operation. In this paper, CFD numerical simulation method is used to study the bearing rotor system and analyze the bearing performance. Finally, the results were verified by experiments.

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