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C1Po1C-03: The theoretical research on static and dynamic characteristics of orifice throttling hydrostatic thrust gas bearing of helium cryogenic turbine expander

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The orifice throttling hydrostatic gas bearing has the advantages of simple structure, long service life and easy to reach the expected speed, it has been widely used in the field of high-precision machinery. The orifice throttling hydrostatic thrust gas bearing plays an important role in the development of helium cryogenic turbo expander. A numerical analysis on the orifice-type hydrostatic gas bearing is carried out to study the relationship between the static and dynamic characteristics and the parameters, such as the rotating speed、gas film gap and so on. The reason of the air hummer is also analyzed, the air phenomenon is closely to the volume、depth and the pressure of the air chamber.

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