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C2Po1D-04 [07]: Design of a two-stage gas-coupled high-frequency multi-bypass pulse tube cryocooler working around 4 K

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High-frequency pulse tube cryocooler is difficult to obtain lower cooling temperature: to obtain the liquid helium temperature, three-stage or four-stage structure by thermal coupling are currently used. In order to further improve the compactness, a two-stage gas-coupled high-frequency multi-bypass coaxial pulse tube cryocooler has been designed. The simulation results indicate that the designed cryocooler can provide a cooling capacity of 20mW@4.2K with 370W input electrical work. The interaction between structural parameters and operating conditions, as well as some preliminary test results will be presented in this paper.

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