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Model optimization method and connected-pipe experiment of a liquid fuel ramjet engine

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中文摘要:

The optimization method of a mathematical model and connected-pipe experimental technique for a test in altitude test facility (ATF) of a liquid fuel ramjet engine was researched. The optimization of the simple mathematical model was divided into two steps. Firstly, using the test engine's geometry configuration size data, a preliminary adjustment was done. Secondly, using experimental test data, the components' experiential coefficients were modified appropriately. Emphasis was laid on the simulation technique of flight condition and parameters measurement method. The experimental technique was applied to a ramjet ATF test successfully. The comparison results show that the optimized-model has higher precision and the nozzle gross thrust difference drops from 12% to about 4%.

英文摘要:

The optimization method of a mathematical model and connected-pipe experimental technique for a test in altitude test facility (ATF) of a liquid fuel ramjet engine was researched. The optimization of the simple mathematical model was divided into two steps. Firstly, using the test engine's geometry configuration size data, a preliminary adjustment was done. Secondly, using experimental test data, the components' experiential coefficients were modified appropriately. Emphasis was laid on the simulation technique of flight condition and parameters measurement method. The experimental technique was applied to a ramjet ATF test successfully. The comparison results show that the optimized-model has higher precision and the nozzle gross thrust difference drops from 12% to about 4%.