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## **Study on Minor Losses around the Thermoacoustic Parallel Stack in the Oscillatory Flow Conditions**

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Minor losses around the thermoacoustic parallel stack in the oscillatory flow conditions are one of the main factors influencing on the efficiency of the thermoacoustic systems. In this paper, a two-dimension model of a single stack in a standing wave thermoacoustic refrigerator is setup. The acoustic characteristics including oscillating pressure, volume flow rate and impedance of the oscillatory flow at the thermoacoustic parallel stacks and its adjacent areas are simulated and compared under different driving conditions. Meanwhile based on the principle of two-microphone method and the above simulation result, the minor loss coefficient of oscillatory flow through a sudden area change are analyzed. The result shows that the acoustic impedance is inversely proportional to the ratio of traveling wave. The real part of minor loss coefficient exponentially increased with the ratio of hydraulic radius and displacement amplitude of oscillatory flow. Furthermore, a close agreement between simulation and experimental results is found, thus providing support for the applicability of the model.

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