

磁流體在HELE-SHAW CELL流場中的自然對流實驗研究

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摘要

本實驗主要在研究磁流體於長寬比為一的HELE-SHAW CELL流場中的自然對流現象。實驗中利用電阻式加熱片，由試片下方加熱的方式來產生自然對流，並外加垂直磁場，利用資料擷取系統坐熱傳值的量測，及使用紋影法來觀察磁場對本流場不穩定性的影響。從熱傳值的量測與紋影法的流場觀察發現外加垂直磁場對流場的不穩定性可加速流場不穩定性的發生，進而增進熱對流的效果有著顯著的影響。整個不穩定的流場模式未外加垂直磁場與有外加磁場的情大大不相同。

關鍵詞：磁流體、自然對流、HELE-SHAW CELL流場、紋影法

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