



Discrete Geometries of Mathematics and Physics

Poster

报告通知

Understanding thermal flow and phase instabilities in geothermal systems

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Abstract 摘要 This study explores the instability of the liquid–vapour interface in a geothermal system bounded by isothermal surfaces. Through a two-dimensional linear stability analysis of the isothermal base state, it is found that the Rayleigh–Taylor mechanism predominantly drives the onset of instability. A conditional expression for the critical modified Rayleigh number is derived, accounting for various heat transport mechanisms. The results highlight that spontaneous instability arises primarily due to two simplifications: neglecting thermal advection and assuming the phase change front is equidistant from the liquid and vapour boundaries.

Brief introduction of the presenter 汇报人简介 Prof. Zafar Hayat Khan is a world-class scientist. He was named among World Ranking of Top 2% Scientists and Highly Cited Chinese Researchers for multiple times and won 1000 High Level Talent Award Sichuan.

Zafar Hayat Khan教授是一名世界级科学家，多次入选“全球前2%科学家榜单”和“中国高被引学者年度榜单”，四川千人计划获奖人。