

國立中山大學應用數學系

學術演講

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講題：On thermal transpiration and thermomolecular pressure difference

時間：2026/10/19 (Monday) 15:10 ~ 16:00

地點：理 SC 4009-0 教室

茶會：14:45

Abstract

We demonstrate the phenomenon of thermal transpiration in a bounded convex domain. We employ the stationary Boltzmann equation with a cutoff potential. For boundary condition, we partition the boundary into diffuse reflection and incoming regions. We establish the existence of solution in a weighted L-infinity space. Furthermore, we consider a convex domain with diffuse reflection boundary condition in the middle and incoming boundary condition at the two ends.

We first consider Maxwellians with the same pressure but different temperatures at the two ends. We prove that the total flux is directed toward the hot end.

In addition, we show that when the ratio of pressures is proportional to the square root of ratio of temperatures on the two ends, the total flux tends to 0 as Knudsen number tends to infinity. This result is consistent with Knudsen's finding of thermomolecular pressure difference in 1909.

敬 請 公 告 ！ 歡 迎 參 加 ！

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