

國立中正大學數學系
暨應用數學碩士班、統計科學碩士班
學 術 演 講

**Existence and Multiplicity of Phase-Locked Solutions in Two
Asymmetrically Coupled Stuart–Landau Oscillators**

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Abstract

Phase locking occurs when coupled oscillators have a common frequency and their phase differences remain constant. In this talk, we study two non-identical Stuart–Landau oscillators under asymmetric diffusive coupling and consider phase-locked solutions with positive amplitudes. Unlike in the symmetric case, the stationary equations do not provide explicit formulas for these solutions. We therefore introduce the amplitude ratio and express the bifurcation parameter as a function of this variable. This formulation allows us to classify the existence and multiplicity of phase-locked solutions in the strong, intermediate, and weak coupling regimes. We describe how the number of solutions changes as this parameter varies and show that weak coupling may give rise to several distinct bifurcation scenarios. We compare the analytical results with numerical bifurcation diagrams.

日 期：115 年 9 月 7 日(星期一) 15:00~16:00

地 點：本校數學館 527 教室（嘉義縣民雄鄉大學路 168 號）

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