

# 中央研究院統計科學研究所 學術演講

講 題：Using Animal Instincts to Find Efficient Experimental Designs for Biomedical Studies

演講人：Prof. Weng Kee Wong  
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時 間：2019年3月4日（星期一）上午10:00-12:00

地 點：中央研究院統計科學研究所6005會議室(環境變遷研究大樓A棟)

※茶 會：上午 09：40 開始

## Abstract

I review and discuss use of nature-inspired metaheuristic algorithms as general purpose tools for solving optimization problems in statistics. The approach works quite magically and frequently finds an optimal solution or a nearly optimal solution quickly. There is virtually no explicit assumptions required for such methods to be applicable and the user only needs to input a few easy tuning parameters. I focus on one of the more popular algorithms, particle swarm optimization (PSO), and demonstrate its ability to find various types of optimal designs for biomedical studies, including dose response studies, early phase II trials, optimal designs for generalized linear models with interacting factors, multiple-objective optimal designs and standardized maximin optimal designs, where effective algorithms to find them have remained stubbornly elusive until now.

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