
臺灣大學應用力學研究所
演 講 公 告

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講 題：史特靈冷凍機技術簡介

主 持 人：陳國慶所長

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☆☆ 歡迎聽講，敬請張貼 ☆☆

史特靈冷凍機技術簡介

Brief Introduction to Stirling Cryogenic Coolers Technology

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In the past several decades, Stirling cooler technology has played an important role in cryogenic applications of aeronautics and astronautics, national defense, optical sensor, and medicine transportation owing to its compact configuration. At a cooling load below 10 W, Stirling cooler gives the best relative Carnot efficiency compared with other types of cryocoolers. In addition, the lifetime has been raised up to 10 years owing to the improvement of the compressor. Besides, Stirling cooler also features the flexibility of working gases in use, that can be air, nitrogen, helium, or hydrogen. One of the most important applications of Stirling cooler is in IR system. The IR system has a cooled thermal imager equipped with an infrared detector, for example, Mercury Cadmium Telluride (MCT) and Indium Antimonide (InSb). For lower thermal noise, the detector is operated at cryogenic temperature ranging from 70 to 80 K. Compared with uncooled ones, the cooled imager leads to better performance in temperature sensitivity, measuring distance, spatial resolution and signal synchronization. In this talk, current development of the Stirling cryogenic coolers technology will be reviewed, and fundamental principles with the Stirling coolers will be described briefly.

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President, Stirling International Association (SIA) (國際史特靈學會 理事長)(2022/6~)

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中華民國航空太空學會 理事長 (2012~2014)

中華民國力學學會 秘書長 (2008~2010)

著作：

496 篇論文(含 159 國際 SCI 期刊論文、5 篇 Book papers、332 會議論文)

39 件發明專利

其他：

Top 2% Scientists in the World named by Stanford University (2021)