NCU-GISS 國立中央大學太空科學研究所 Graduate Institute of Space Science

# 專題演講

## Total Eclipse of the Heart　I ❤ 明全蝕

Speaker： **Dr. Cissi Ying-tsen Lin**

Department of Physics University of Texas at Arlington

Time： 107 年 11 月 16 日　星期五　14:00

Place： 健雄館(科四館)　S4-811 教室

摘　要/Abstract：

Just as a boat moving through the surface of a lake stirs up waves in its wake, the lunar shadow moving across continents stirs up waves in our atmosphere during a solar eclipse. While the 2017 solar eclipse allowed a once-in-a-lifetime viewing opportunity for over 200 million Americans, it also allowed scientists to capture unambiguous bow waves predicted by theoretical studies decades ago with the modern Global Navigation Satellite System (GNSS). In this study, we use a self-consistent global circulation model for the upper atmosphere to further confirm the formation of bow waves by the supersonically moving lunar shadow. Waves with period of 20-30 minutes observed by GNSS have been reproduced in our simulations.

萬里無雲卻頓時暮色籠罩，蟲鳴鳥叫，紛紛歸巢，回過神來，不是方才剛食過午飯？古時人們稱之「天狗食日」，敲鑼打鼓、避之唯恐不及；如今追日人潮絡繹不絕，機票飯店一位難求。如同船隻駛過湖面後留下的波紋，日蝕時，月亮的陰影同樣擾動了地球的大氣。2017 年的日全蝕橫跨美國 14 州，為當今地球科學家提供了一個前所未有的研究機會，也讓 GPS 觀測網得以第一次觀測到 bow waves。我們利用全球高層大氣模型發現全蝕地點的上空相較於偏食地點有週期 20 到 30 分鐘的重力波震盪，則和 GPS 觀測的 bow waves 相當類似。

※歡迎聽講※

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