

# 中央研究院數學研究所

Institute of Mathematics, Academia Sinica

## Taipei Postdoc Seminar

**Speaker** : Jesse Madnick (NCTS)

**Title** : Minimal Submanifolds in Exceptional Geometries via the Octonions

**Time** : 14:00 – 15:00, Wednesday, October 14, 2020

**Venue** : Lecture Hall 5F, Cosmology Building, NTU  
(臺灣大學次震宇宙館 五樓演講廳)

**Abstract** : Minimal submanifolds are "volume efficient shapes." Classic examples include minimal surfaces in  $\mathbb{R}^3$  and geodesics in a Riemannian manifold. However, despite their name, minimal submanifolds are only critical points for the volume functional, and need not be actual volume-minimizers. In fact, volume-minimizing submanifolds are quite hard to find! In this talk, we will explain how volume-minimizing submanifolds arise naturally in manifolds with exceptional geometric structures. These structures are intimately related to the normed division algebras ( $\mathbb{R}$ ,  $\mathbb{C}$ ,  $\mathbb{H}$ , and  $\mathbb{O}$ ), and are of interest in Riemannian geometry, gauge theory and theoretical physics. Time permitting, we will mention some new examples of 4-dimensional volume-minimizing cones inside an 8-manifold modeled on the octonions.

**Organizer** : Wei-Bo Su (AS), Peng-Jie Wong (NCTS)

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