

# 國立中山大學應用數學系

## 學術演講

講者：Tin-Yau Tam (University of Nevada, Reno)  
講題：Geometric inequalities for contraction matrices  
時間：2024/1/10 (Wednesday) 2:10 pm ~ 3:00 pm  
地點：理學院四樓理 SC 4009-1 室  
茶會：1:45 pm 於理 SC 4010 室 (系辦公室)

### Abstract

The set of  $p \times q$  contraction matrices is

$$\mathcal{D}_{p,q} := \{Z \in \mathbb{C}_{p \times q} : I - Z^*Z > 0\},$$

or equivalently,  $\mathcal{D}_{p,q} := \{Z \in \mathbb{C}_{p \times q} : s_1(Z) < 1\}$  where  $s_1(\cdot)$  denotes the largest singular value. It is a classical domain, that is, an irreducible bounded symmetric domain and can be identified with  $SU(p, q)/S(U(p) \times U(q))$ , where  $U(p)$  denotes the group of  $p \times p$  unitary matrices and  $SU(p, q)$  denotes the pseudo-unitary group of signature  $(p, q)$ . In this talk give geodesic inequalities for  $\mathcal{D}_{p,q}$  when it is viewed as a Riemannian manifold equipped with a natural Riemannian structure.

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