

# The Set of Completely Positive Maps and its Geometric Properties

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## **Abstract**

Let  $C$  is a closed convex set in a topological vector space  $(X, \tau)$ . An element  $\omega \in C$  is said to be an exposed point if there exists a  $\tau$ -continuous linear functional  $f$  on  $X$  such that  $Re f(x) < Re f(\omega)$  for all  $x \in C \setminus \{\omega\}$ . For a unital  $C^*$ -algebra  $A$  and complex Hilbert space  $H$ , extremal structure of the set of all completely positive linear maps  $CP(A, H)$  of  $A$  into  $B(H)$ , where  $B(H)$  denotes the  $C^*$ -algebra of all bounded linear operators on  $H$  was determined several years ago by Arveson [Acta Math. 123 (1969), 141-224]. In this note we study geometric structure of these sets in terms of exposed points.