

1096-VM-2134

Andrew J. Klimas* (aklimas@xula.edu), Xavier University of Louisiana, Department of Mathematics, New Orleans, LA 70125. *The Construction of Faces of CP_2* . Preliminary report.

This paper on the faces of the cone $\pi(PSD_n)$ of positive semidefinite-preserving linear transformations on the complex vector space of complex matrices of order n and its self-dual subcone CP_n of the completely positive linear transformations explores in particular the construction of faces of CP_2 . Carefully-chosen matrices can be used to construct faces of CP_2 of dimensions 1, 4, 9, and 16. Using a characterization of Kye, it can be determined whether any such face lies in the boundary or interior of $\pi(PSD_2)$. If a face of CP_2 contains an element that lies in the interior of $\pi(PSD_2)$, it follows that the face cannot be a face of $\pi(PSD_2)$. Some faces of CP_2 can be shown to lie in the boundary of $\pi(PSD_2)$ while others can be shown to indeed lie in the interior of $\pi(PSD_2)$. A number of cases are open questions. (Received September 17, 2013)