The Electronic Journal of Linear Algebra.
A publication of the International Linear Algebra Society.
Volume 2, pp. 1-8, April 1997.
ISSN 1081-3810. http://gauss.technion.ac.il/iic/ela

ELA

INFINITE PRODUCTS AND PARACONTRACTING MATRICES *

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Abstract. In [*Linear Algebra Appl.*, 161:227–263, 1992] the LCP-property of a finite set Σ of square complex matrices was introduced and studied. A set Σ is an LCP-set if all left infinite products formed from matrices in Σ are convergent. It was shown earlier in [*Linear Algebra Appl.*, 130:65–82, 1990] that a set Σ paracontracting with respect to a fixed norm is an LCP-set. Here a converse statement is proved: If Σ is an LCP-set with a continuous limit function then there exists a norm such that all matrices in Σ are paracontracting with respect to this norm. In addition the stronger property of ℓ-paracontractivity is introduced. It is shown that common ℓ-paracontractivity of a set of matrices has a simple characterization. It turns out that in the above mentioned converse statement the norm can be chosen such that all matrices are ℓ-paracontracting. It is shown that for Σ consisting of two projectors the LCP-property is equivalent to ℓ-paracontractivity, even without requiring continuity.

AMS(MOS) subject classification. 65F10, 47H09, 15A99

Key words. Convergence, infinite products, LCP-property, product boundedness, paracontracting matrices, norms, projections

* Received by the editors on 8 October 1996. Final manuscript accepted on 26 February 1997. Handling editor: Daniel Hershkowitz.

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