



# **SHORT COMMUNICATIONS (Abstracts)**

## **VI**

### **Section 9: Real and functional analysis Part I**

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THE DIAGONAL PRINCIPLE FOR GENERALIZED SEQUENCES

A class  $\Sigma$  of generalized sequences (i.e. of directed systems) is said to be stable if it contains every subsequence of every sequence which belongs to  $\Sigma$ .

THEOREM. Let  $\Omega$  be a set of stable classes  $\Sigma$  and let  $\{a_\alpha\}$  be a generalized sequence. If for every fixed  $\Sigma$  every subsequence  $\{a_{\alpha_\beta}\}$  contains a subsubsequence  $\{a_{\alpha_\beta\gamma}\}$  that belongs to  $\Sigma$  then there is a generalized subsequence  $\{a_{\alpha_\delta}\}$  which does not depend on  $\Sigma$  such that by any choice of  $\Sigma \in \Omega$  the sequence  $\{a_{\alpha_\delta}\}$  belongs to  $\Sigma$  for sufficiently large values of  $\delta$ , i.e. there is some  $\delta_0$ , which may depend on  $\Sigma$ , such that

$$\{a_{\alpha_\delta}\}_{\delta > \delta_0} \in \Sigma,$$

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A NOTE ON CRITERIA OF LE PAGE AND HIRSCHFELD-ZELAZKO  
FOR THE COMMUTATIVITY OF BANACH ALGEBRAS

Let  $T$  be a continuous linear operator from a complex Banach algebra  $A$  to a normed space  $E$ . The following statements are shown to be equivalent: (i)  $T(xy) = T(yx)$  for all  $x, y \in A$ . (ii) There exists a number  $k > 0$  such that  $\|T(xy+y)\| \leq k\|yx+y\|$  for all  $x, y \in A$ . Some criteria of Le Page and Hirschfeld-Zelazko for the commutativity of Banach algebras, a theorem of Bonsall-Duncan on spectral states and generalizations of these results for Banach algebras without unit are easily obtained as immediate consequences.