



## LINEAR MAPS PRESERVING PSEUDOSPECTRUM AND CONDITION SPECTRUM

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**ABSTRACT.** We discuss properties of pseudospectrum and condition spectrum of an element in a complex unital Banach algebra and its  $\epsilon$ -perturbation. Several results are proved about linear maps preserving pseudospectrum/ condition spectrum. These include the following:

- (1) Let  $A, B$  be complex unital Banach algebras and  $\epsilon > 0$ . Let  $\Phi : A \rightarrow B$  be an  $\epsilon$ -pseudospectrum preserving linear onto map. Then  $\Phi$  preserves spectrum. If  $A$  and  $B$  are uniform algebras, then,  $\Phi$  is an isometric isomorphism.
- (2) Let  $A, B$  be uniform algebras and  $0 < \epsilon < 1$ . Let  $\Phi : A \rightarrow B$  be an  $\epsilon$ -condition spectrum preserving linear map. Then  $\Phi$  is an  $\epsilon'$ -almost multiplicative map, where  $\epsilon, \epsilon'$  tend to zero simultaneously.

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