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***Extensions of topological and semitopological groups and the product operation***

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**Abstract:** The main results concern commutativity of Hewitt-Nachbin realcompactification or Dieudonné completion with products of topological groups. It is shown that for every topological group  $G$  that is not Dieudonné complete one can find a Dieudonné complete group  $H$  such that the Dieudonné completion of  $G \times H$  is not a topological group containing  $G \times H$  as a subgroup. Using Korovin's construction of  $G_\delta$ -dense orbits, we present some examples showing that some results on topological groups are not valid for semitopological groups.

**Keywords:** topological group, Dieudonné completion, PT-group, realcompactness, Moscow space,  $C$ -embedding, product

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