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Duality of topological modules over normed rings.  (English)  Zbl 1398.46039


The paper studies topological (left or right) modules over unital normed rings. Let \(M, N\) be two topological left modules over a unital normed ring \(R\). Then the set (actually, a topological group under the pointwise addition) of all continuous \(R\)-homomorphisms from \(M\) to \(N\) is denoted by \(B(M, N)\). In the paper, it is shown that, if \(M\) and \(N\) are locally bounded and \(N\) is Hausdorff, then \(B(X, Y)\) is a locally bounded Hausdorff space. Let \(R\) be a unital topological ring and \(S\) an admissible ring. In this case, the functors \(B(N, -)\) and \(B(-, N)\) are studied for a topological \((R, S)\)-bimodule \(N\). It is shown that, for any topological left \(R\)-module \(M\), the set \(B(N, M)\) is a topological left \(S\)-module and the set \(B(M, N)\) is a topological right \(S\)-module. Some properties of topologically (left or right) exact sequences are also proved for admissible rings.

Reviewer: Mart Abel (Tartu)

MSC:

46H25 Normed modules and Banach modules, topological modules (if not placed in 13-XX or 16-XX)

46M15 Categories, functors in functional analysis

46M18 Homological methods in functional analysis (exact sequences, right inverses, lifting, etc.)

Keywords:

topological module; normed ring; duality; topologically (left or right) exact sequences; operator topology

Full Text: DOI

References:


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