

**Arnautov, Vladimir; Filippov, Kirill**

**On group topologies on an Abelian group preceding one another.** (English) [Zbl 1106.22005](#)  
Cojocaru, Svetlana (ed.) et al., Computational commutative and non-commutative algebraic geometry. Proceedings of the NATO Advanced Research Workshop, Chisinau, Republic of Moldova, June 6–11, 2004. Amsterdam: IOS Press (ISBN 1-58603-505-3/hbk). NATO Science Series III: Computer & Systems Sciences 196, 251-267 (2005).

For an algebraic system, there is a natural query to the possibility of endowing it with a topology possessing the desired properties. Since 1946 many mathematicians have done investigations to solve the problem for infinite groups and infinite rings and satisfactory results have been obtained.

The problem of the number of different topologies and the existence of long chains of topologies on algebraic systems came subsequently after the solution of the problem of the desired non-discrete topologization of such systems. Much has been done on module topologies preceding one another and this article is a continuation to the investigation to this problem.

A complete picture of the preceding research is given in the first section. The second section contains a new construction of a topology preceding the given metrizable topology in the lattice of all group topologies on  $G$  admitting a basis of neighborhoods of zero consisting of subgroups of an abelian group of period  $p^2$  where  $p$  is a prime; here  $G \cong \bigoplus_{i \in I} (Z_{p^2})_i$  for a fixed  $p$ . The paper concludes with a theorem which deals with the case when  $I$  is a countable set.

For the entire collection see [[Zbl 1077.14002](#)].

Reviewer: S. Ganguly (Kolkata)

**MSC:**

[22A99](#) Topological and differentiable algebraic systems  
[16W99](#) Associative rings and algebras with additional structure

**Keywords:**

[module topologies](#);  [\$Z\_{p^2}\$ -module](#); [non-discrete topologization](#)