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The relativized Lascar groups, type-amalgamation, and algebraicity. (English) Zbl 07415214

Summary: In this paper we study the relativized Lascar Galois group of a strong type. The group is a quasi-compact connected topological group, and if in addition the underlying theory $T$ is $G$-compact, then the group is compact. We apply compact group theory to obtain model theoretic results in this note. For example, we use the divisibility of the Lascar group of a strong type to show that, in a simple theory, such types have a certain model theoretic property that we call divisible amalgamation. The main result of this paper is that if $c$ is a finite tuple algebraic over a tuple $a$, the Lascar group of $stp(ac)$ is abelian, and the underlying theory is $G$-compact, then the Lascar groups of $stp(ac)$ and of $stp(a)$ are isomorphic. To show this, we prove a purely compact group-theoretic result that any compact connected abelian group is isomorphic to its quotient by every finite subgroup. Several (counter)examples arising in connection with the theoretical development of this note are presented as well. For example, we show that, in the main result above, neither the assumption that the Lascar group of $stp(ac)$ is abelian, nor the assumption of $c$ being finite can be removed.

MSC:

03C45 Classification theory, stability, and related concepts in model theory
22C05 Compact groups

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References:


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