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ACCEPTED MANUSCRIPT

On Groups That Are Dominated by Countably Many Proper Subgroups

Ahmet Arikan*, Giovanni Cutolo†, Derek J.S. Robinson‡

In memoriam: Brian Hartley and David McDougall

Abstract

In this work we study groups for which there is a countable set of proper subgroups with the property that every proper subgroup is contained in some member of the set.

2010 Mathematics Subject Classification: Primary 20E15. **Key Words:** proper subgroup, countably dominated set.

1. Introduction

This article is the third in a series of studies of countability restrictions on the partially ordered set of subgroups of a group. In [16] and [6] the authors considered the property that a group have only countably many subgroups (**CMS**). This is a very strong property and its consequences for the group structure are considerable. For example, in [6] the authors were able to classify all soluble groups with **CMS**: they are precisely the soluble minimax groups without abelian factors of type $p^\infty \times p^\infty$ for any prime p.

In a subsequent paper [2] the present authors studied the much weaker property that a group have countably many maximal subgroups (**CG**). Modules and rings with countably many maximal submodules or right ideals respectively played an important part in

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