

MODEL THEORY OF MODULES*

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Introduction

The model theory of abelian groups was developed by Szmielew ([28] quantifier elimination and decidability) and Eklof & Fisher [4], who observed that \aleph_1 -saturated abelian groups are pure injective. Eklof & Fisher related the structure theory of pure injective abelian groups with their model theory.

The extension of this theory to modules over arbitrary rings became possible after the work of Baur [1], Monk [14], Fisher [6] and Warfield [30]. Baur proved that — for any fixed module M — every formula is equivalent to a boolean combination of positive primitive formulas $\varphi(x_1, \dots, x_n)$ (which assert the solvability of

* Work done during the Logic Year 1980-81 at the Institute for Advanced Studies, The Hebrew University of Jerusalem.

Model Theory And Modules

Mike Prest

Model Theory And Modules:

Model Theory and Modules Mike Prest,1988-02-25 In recent years the interplay between model theory and other branches of mathematics has led to many deep and intriguing results In this the first book on the topic the theme is the interplay between model theory and the theory of modules The book is intended to be a self contained introduction to the subject and introduces the requisite model theory and module theory as it is needed Dr Prest develops the basic ideas concerning what can be said about modules using the information which may be expressed in a first order language Later chapters discuss stability theoretic aspects of modules and structure and classification theorems over various types of rings and for certain classes of modules Both algebraists and logicians will enjoy this account of an area in which algebra and model theory interact in a significant way The book includes numerous examples and exercises and consequently will make an ideal introduction for graduate students coming to this subject for the first time **Model Theory and Modules** Mike Prest,2014-05-14 Professor Prest is the first to address the topic of the development of the interplay between model theory and the theory of modules In recent years the relationship between model theory and other branches of mathematics has led to many profound and intriguing results This self contained introduction to the subject introduces the requisite model theory and module theory as it is needed It then develops the basic ideas of determining what can be said about modules using the information that may be expressed in first order language Later chapters discuss stability theoretic aspects of modules and structure and classification theorems over various types of rings and for certain classes of modules [Model Theory and Modules](#) M. Prest,1988 In recent years the interplay between model theory and other branches of mathematics has led to many deep and intriguing results In this the first book on the topic the theme is the interplay between model theory and the theory of modules The book is intended to be a self contained introduction to the subject and introduces the requisite model theory and module theory as it is needed Dr Prest develops the basic ideas concerning what can be said about modules using the information which may be expressed in a first order language Later chapters discuss stability theoretic aspects of module

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Functor Categories, Model Theory,

Algebraic Analysis and Constructive Methods Alexander Martsinkovsky,2024-05-04 This volume comprises selected contributions by the participants of the second Functor Categories Model Theory Algebraic Analysis and Constructive Methods conference which took place at the University of Almería Spain in July 2022 The conference was devoted to several seemingly unrelated fields functor categories model theory of modules algebraic analysis including linear control systems and constructive category theory to mention just a few The fact that these fields are actually related is a very recent realization The connections between these disciplines are changing in real time and the goal of this volume is to provide an initial reference point for this emerging interdisciplinary field Besides research articles the volume includes two extended lectures one on constructive methods in algebraic analysis and the other on the functorial approach to algebraic systems theory Hence in addition to its interest for researchers the volume will also be an invaluable resource for newcomers

Algebraic Model Theory Bradd T. Hart,A. Lachlan,Matthew A. Valeriote,2013-03-14 Recent major advances in model theory include connections between model theory and Diophantine and real analytic geometry permutation groups and finite algebras The present book contains lectures on recent results in algebraic model theory covering topics from the following areas geometric model theory the model theory of analytic structures permutation groups in model theory the spectra of countable theories and the structure of finite algebras Audience Graduate students in logic and others wishing to keep abreast of current trends in model theory The lectures contain sufficient introductory material to be able to grasp the recent results presented

Some Model Theory of Modules Ivo Herzog,1991

Model Theoretic Algebra With Particular Emphasis on Fields, Rings, Modules Christian. U Jensen,Helmut Lenzing,1989-07-26 Looks like a text and a handsome one at that but the authors prefer to describe their creation as notes intended to acquaint graduate students with the power of the most basic principles of model theory by applying them to classical questions in algebra Thirteen chapters the last given to the enumeration of some open problems plus tables and several appendices bibliography NW Annotation copyrighted by Book News Inc Portland OR

Definable Additive Categories: Purity and Model Theory Mike Prest,2011-02-07 Most of the

model theory of modules works with only minor modifications in much more general additive contexts such as functor categories categories of comodules categories of sheaves Furthermore even within a given category of modules many subcategories form a self sufficient context in which the model theory may be developed without reference to the larger category of modules The notion of a definable additive category covers all these contexts The imaginaries language which one uses for model theory in a definable additive category can be obtained from the category of structures and homomorphisms itself namely as the category of those functors to the category of abelian groups which commute with products and direct limits Dually the objects of the definable category the modules or functors or comodules or sheaves to which that model theory applies may be recovered as the exact functors from the small abelian category the category of pp imaginaries which underlies that language [Groups, Modules, and Model Theory - Surveys and Recent Developments](#)

Manfred Droste,László Fuchs,Brendan Goldsmith,Lutz Strüngmann,2017-06-02 This volume focuses on group theory and model theory with a particular emphasis on the interplay of the two areas The survey papers provide an overview of the developments across group module and model theory while the research papers present the most recent study in those same areas With introductory sections that make the topics easily accessible to students the papers in this volume will appeal to beginning graduate students and experienced researchers alike As a whole this book offers a cross section view of the areas in group module and model theory covering topics such as DP minimal groups Abelian groups countable 1 transitive trees and module approximations The papers in this book are the proceedings of the conference New Pathways between Group Theory and Model Theory which took place February 1 4 2016 in M lheim an der Ruhr Germany in honor of the editors colleague R diger G bel This publication is dedicated to Professor G bel who passed away in 2014 He was one of the leading experts in Abelian group theory [Bulletin \(new Series\) of the American Mathematical Society](#) ,1991 [Bulletin of the Belgian Mathematical Society, Simon Stevin](#) ,2006 **Hilbert Modules Over Function Algebras** Ronald G. Douglas,Vern I. Paulsen,1989 [Mathematical Reviews](#) ,2004 **The Bulletin of Symbolic Logic** ,2008 [Bulletin of the American Mathematical Society](#) ,1991 [A Course in Model Theory](#) Katrin Tent,Martin Ziegler,2012-03-08 Concise introduction to current topics in model theory including simple and stable theories [Universal Algebra and Its Links with Logic, Algebra, Combinatorics, and Computer Science](#) Peter Burmeister,1984

Reviewing **Model Theory And Modules**: Unlocking the Spellbinding Force of Linguistics

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