

# Lecture Notes in Mathematics

Edited by A. Dold and B. Eckmann

349

---

## Modular Functions of One Variable II

Proceedings International Summer School  
University of Antwerp, RUCA  
July 17–August 3, 1972

Edited by P. Deligne and W. Kuyk

---



Springer-Verlag  
Berlin Heidelberg New York Tokyo

**Editors**

**Pierre Deligne**

Institute for Advanced Study, School of Mathematics  
Princeton, NJ 08540, USA

**Willem Kuyk**

Rijksuniversitair Centrum Antwerpen, Leerstoel Algebra  
Groenenborgerlaan 171, 2020 Antwerpen, Belgium

1st Edition 1973

2nd Corrected Printing 1986

Mathematics Subject Classification (1970): 10-02, 10D 15, 10H 10, 14G 10,  
14G 99, 14H 10, 14L 99

ISBN 3-540-06558-X Springer-Verlag Berlin Heidelberg New York Tokyo

ISBN 0-387-06558-X Springer-Verlag New York Heidelberg Berlin Tokyo

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically those of translation, reprinting, re-use of illustrations, broadcasting, reproduction by photocopying machine or similar means, and storage in data banks. Under § 54 of the German Copyright Law where copies are made for other than private use, a fee is payable to "Verwertungsgesellschaft Wort", Munich.

© by Springer-Verlag Berlin Heidelberg 1973  
Printed in Germany

Printing and binding: Beltz Offsetdruck, Hemsbach/Bergstr.  
2146/3140-543210

## PREFACE

This is Volume 2 of the Proceedings of the International Summer School on

"Modular functions of one variable and  
arithmetical applications"

which took place at RUCA, Antwerp University, from July 17 till August 3, 1972.

It contains papers by W. Casselman, P. Deligne, R. Langlands and I.I. Piateckii-Shapiro. Its theme is the interplay between modular schemes for elliptic curves, and representations of  $GL(2)$ .

P. Deligne

W. Kuyk

## CONTENTS

W. CASSELMAN	An assortment of results on representations of $GL_2(k)$	1
P. DELIGNE	Formes modulaires et représentations de $GL(2)$	55
W. CASSELMAN	On representations of $GL_2$ and the arithmetic of modular curves	107
P. DELIGNE - M. RAPOPORT	Les schémas de modules de courbes elliptiques	143
I.I. PIATECKII-SHAPIRO	Zeta-functions of modular curves	317
R.P. LANGLANDS	Modular forms and $\ell$ -adic representations	361
P. DELIGNE	Les constantes des équations fonctionnelles des fonctions L	501
	Addresses of authors	598