

AN ELEMENTARY INTRODUCTION TO THE LANGLANDS PROGRAM

BY STEPHEN GELBART¹

TABLE OF CONTENTS

Preface

I. Introduction

II. Classical Themes

- A. The Local-Global Principle
- B. Hecke's Theory and the Centrality of Automorphic Forms
- C. Artin (and Other) L -functions
- D. Group Representations in Number Theory

III. Automorphic Representations

- A. Some Definitions
- B. Local Invariants

IV. The Langlands Program

- A. Preliminary L -functions
- B. L -groups and the Functoriality of Automorphic Representations
- C. What's Known?
- D. Methods of Proof
- E. A Few Last Words

Bibliography

PREFACE

In a recent issue of the Notices of the American Mathematical Society (April 1983, p. 273), as part of a very brief summary of *Progress in Theoretical Mathematics* presented to the Office of Science and Technology of the President of the United States by a briefing panel from the National Academy of Sciences chaired by William Browder, the general mathematical reader will find the following paragraphs:

Based on a lecture delivered at the Conference dedicating the Professor Abe Gelbart Chair in Mathematics at Bar Ilan University, Ramat Gan, Israel, January 1983; received by the editors July 12, 1983.

1980 *Mathematics Subject Classification*. Primary 10D40, 12A67; Secondary 22E55.

¹Supported in part by a grant from the National Science Foundation.