

BIBLIOGRAPHY ON
PLASMA PHYSICS AND MAGNETOHYDRODYNAMICS
AND THEIR APPLICATIONS TO
CONTROLLED THERMONUCLEAR REACTIONS

COMPILED BY
JAMES D. RAMER

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COMPILED BY: JAMES D. RAMER, LIBRARIAN

ASSISTED BY: CHONG KOOK LEWE
MAURICE BARKLEY

UNIVERSITY OF MARYLAND
COLLEGE PARK, MARYLAND

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PREFACE

The subject of magnetohydrodynamics has an old history, since some experiments on the motion of electrically conducting fluids subjected to magnetic forces were carried out in the 19th century. It is primarily in the last two decades, however, that it has begun to attract wide attention. Its importance was first recognized in astrophysics, where the immense distances which can be traversed by particles before they make collisions produce an almost infinite conductivity. Soon afterwards, cases of gas flow at very high temperatures were realized in laboratory experiments with shock waves; and when the study of the motion of bodies through the upper atmosphere and beyond was started, it was found that very high temperatures can also occur in boundary layer flow. At these temperatures the gas can become sufficiently ionized to be sensitive to induction effects from strong magnetic fields, such as can be realized with electromagnets and with condensor discharges through coils.

Since then the subject has developed in many direction, ranging from classical problems dealing with the flow of continuous fluids in magnetic fields and with stability investigations, to the flow of gases and the appearance of ionization, the peculiar character of the electric conductivity in a magnetic field, and the phenomena presented by completely ionized plasmas of extremely high temperatures.

The literature on the subject is increasing at a rapid rate both in the United States and elsewhere, and many meetings and symposia are devoted to its discussion. We may therefore appreciate very much that James Ramer of the Engineering and Physical Sciences Library of the University of Maryland has undertaken to collect the literature of the period from 1937 to 1959, and it is hoped that his work will be of much help to all workers in the field.

JOHANNES M. BURGERS

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