

ANNUAL REPORT
of the
MICHIGAN STATE UNIVERSITY
CYCLOTRON LABORATORY*
for the period
July 1, 1972 to July 1, 1973

By
Project Staff

October 1973
East Lansing, Michigan

*Supported jointly by National Science Foundation, Atomic Energy Commission, Office of Naval Research and Michigan State University (see Preface for details).

PREFACE

Our Annual Report this year continues to be a composite document, covering all programs of the MSU Cyclotron Laboratory and submitted to all of the agencies which support programs in the laboratory. Sources of current support are listed in Table I below. In addition, we call special attention to the fact that the National Science Foundation was responsible for construction of the laboratory and that therefore other agency research programs which use the facility are thus also supported substantially by the NSF. As is clear from Table I, the major operating support for the laboratory comes from the NSF. Other sources of support include the Atomic Energy Commission, which supports the Nuclear Chemistry group, and the Office of Naval Research, which has provided funds for neutron research. In Table II we list the faculty, research associates, and graduate students in the laboratory, together with the grants or contracts to which they are attached. This listing in Table II includes all persons who were at the laboratory for any part of the year 72-73. Those who have left the laboratory, either during the year or since, are identified by an entry in the present address column.

In our annual report this year we continue with the brief write-ups on "Research in Progress". These write-ups, although often incomplete, give an up-to-date presentation of current activity in the laboratory. Following the pattern of last year, we are including in this report the abstracts of papers delivered at meetings, the

abstracts of papers in press after July 1, 1973 and the title page of articles published during the year. Hopefully this first page presents sufficient information for a reader to ascertain if he is interested in that particular article, so that he can then refer to the appropriate journal or contact the authors for reprints.

The state of the laboratory at this time (October 1973) is one of busy activity in nuclear research. The years of work on improved instrumentation systems are now yielding their harvest, a flow of accurate and, we hope, significant information on nuclear phenomena. One of the major purposes of an annual report is to give others the necessary information to assess the state of our current program. If you feel inclined to make comments to us on the program we would welcome them. Finally, let me again remind all of you that we welcome collaborators from other laboratories--if you have an experiment for which our facilities would be particularly appropriate please let us know.

Henry Blosser

P.S. For the year 73-74 I will be on sabbatical leave and E. Kashy will be Director of the Laboratory.

TABLE I.--Sources of support for the MSU Cyclotron Laboratory for the fiscal year 1972-73.

Institution or Agency		Per Cent of Total
National Science Foundation	Grant GP 27483 (experimental nuclear physics)	62.4
Atomic Energy Commission	Contract AT(11-1)-1779 (nuclear chemistry)	8.4
National Science Foundation	Grant GP 31265X (theoretical nuclear physics)	5.0
Office of Naval Research	Contract N00014-68-A-0109-0008	3.3
Michigan State University		20.9

TABLE II. List of faculty, research associates, and graduate students working at the MSU Cyclotron Laboratory in the period July 1, 1972-June 30, 1973 and their principal sources of support.

Professors	supported by	present address
Sam M. Austin	NSF-exp, MSU	(On leave, LMU, Munich, Sept. 1972-Aug. 73)
Walter Benenson	NSF-exp, MSU	
George F. Bertsch	NSF-theor, MSU	
Henry G. Blosser	NSF-exp, MSU	
Aaron I. Galonsky	NSF-exp, ONR, MSU	
Morton M. Gordon	NSF-exp, NASA, MSU	
Charles Gruhn		
Edwin Kashy	NSF-exp, MSU	(on leave CERN, 72-75)
Wm. H. Kelly	NSF-exp, MSU	
Wm. C. McHarris	AEC-chem, MSU	
Hugh McManus	NSF-theor, MSU	
B. H. Wildenthal	NSF-exp, MSU	(On leave, LMU, Munich, Jan.-June '73)
<u>Associate Professors</u>		
Jerzy R. Borysowicz	NSF-theor, MSU	
Gerard M. Crawley	NSF-exp, MSU	
Sven Maripuu	NSF-exp, MSU	
Jerry A. Nolen, Jr.	NSF-exp, MSU	Univ. of North Carolina
<u>Assistant Professors</u>		
Thelma Arnette	NSF-exp, MSU	
Fred M. Bernthal	AEC-chem, MSU	
Wm. A. Lanford	NSF-exp, MSU	Yale University
R.G.H. Robertson	NSF-exp, MSU	
Ray Warner	AEC-chem, MSU	

Research Associates

Research Associates	supported by	present address
John S. Boyno	NSF-exp, AEC-chem	
Stanley H. Fox	NSF-exp	U. of Cincinnati Medical Center Los Alamos Scientific Laboratories
Greg. C. Giesler	AEC-chem, NSF-exp	SUNY, Oswego
Paul S. Hauge	NSF-theor	
Roger A. Hinrichs	NSF-exp	
Teng Lek Khoo	NSF-exp, AEC-chem	
Amonn Moalem	NSF-exp, BMFT(Germany)	
Hermann Nann	NSF-exp, ONR	
Donald Patterson	NSF-exp	Universiti Malaya
Lolo M. Panggabean	NAS-NIRA	
Lawrence Samuelson	NAS-NIRA	Western Michigan Univ.
Richard R. Todd		
<u>Graduate Students</u>		
Wm. B. Chaffee	MSU, NSF-exp	
Wilton Chung	NSF-exp	
John C. Collins	NSF-exp, ONR	SIN, Villingen, Switz.
Robert R. Doering	NSF-exp	
Carol L. Dors	NSF-exp	
Steven C. Ewald	NSF-exp	
Richard B. Firestone	NSF-exp	MSU, Dept. of Eng.
K. Gilbert		
Jean Guile	NSF-exp	
Greg Hamilton	NSF-exp	
G. Richard Hammerstein	NSF-theor	
Robert Howard (Computer Sci.)	NSF-exp	
Kenneth L. Kosanke	AEC-chem, NSF-exp	Research Assoc., MSU Oak Ridge Natl. Lab. Oak Ridge Natl. Lab.
Duane C. Larson	NSF-exp	
Nancy Larson	NSF-exp	
Clare B. Morgan	NSF-theor	
B. Poon	NSF-theor	
Ivan D. Proctor	NSF-exp	Lawrence Livermore Laboratory
James A. Rice	NSF-exp	
David L. Show	NSF-exp	
Paul Smith	NSF-exp	
Wm. F. Steele	NSF-exp	
Wm. Wagner	NSF-exp	
Herman White	NSF-exp-APS Fellow	CERN (June-Sept. 1972)

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