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PUBLICATIONS OF LOS ALAMOS RESEARCH 1984

INTRODUCTION

Los Alamos National Laboratory, which is operated for the US Department of Energy (DOE) by the University of California, was founded in 1943 as part of the wartime Manhattan Project at the site of the Los Alamos Ranch School, a boys' preparatory school in the mountains of northern New Mexico. It had a single assignment—to create the world's first nuclear fission bombs. Success in that task, one of the greatest scientific and technological achievements of all time, was followed by equal success in developing the first thermonuclear weapons. Since 1952, the Laboratory has diversified its programs, and, while still serving as one of the nation's two development centers for nuclear weapons, Los Alamos now devotes about one-half of its total effort to unclassified research, exploring several peaceful applications of nuclear, conventional, and alternative forms of energy. Los Alamos research covers a broad spectrum, ranging from medium- and low-energy nuclear physics research to programs involving medical and biological effects of radiation and basic work in molecular and cellular biology.

Major nonweapons activities at Los Alamos are energy research in fields such as superconducting electrical energy transmission and storage, solar and geothermal energy development, laser fusion research and laser isotope separation, and controlled thermonuclear research using magnetic confinement.

Facilities used in such research at the Laboratory include specialized laboratories; a nuclear reactor designed for a variety of experiments; and particle accelerators such as the 24-MeV, three-stage Van de Graaff particle accelerator and the 27-MeV electron accelerator designed to produce a very intense, very short burst of x rays for high-speed flash radiography. At the Los Alamos Meson Physics Facility, where physics experiments are carried out and where production of a variety of radioisotopes for medical use is under way, an 800-MeV, 1-mA-beam linear accelerator produces beams of protons, mesons, and other nuclear particles with intensities up to 10 000 times greater than those available elsewhere. Another of the Laboratory's facilities, ZT-40, is a toroidal reversed-field pinch device for controlled thermonuclear research involving magnetic confinement of hot plasmas for fusion research. A Central Computing Facility with four Cray-1s, two Cray X-MPs, four CDC 7600s, three Cyber 825s, and one Cyber 855 assists in the Laboratory's research.

The Laboratory as of 1984 employed approximately 7500 persons, about one-third of whom are scientists and engineers. The total operating costs of the Laboratory, excluding construction, are about \$640 million per year. The investment in DOE-owned buildings and capital equipment at Los Alamos is over \$920 million.

PREFACE

The Los Alamos Libraries' continuing program of locating, recording, and announcing publications of Los Alamos-sponsored research has resulted in the previous publications: "Selected Bibliography of Publications of LASL Research, 1957-1962" (LAMS-2895 and supplement), "Publications of LASL Research" for each of the years 1963 through 1966, "Publications of LASL Research, 1967-1971" (LA-5400-MS), "Publications of LASL Research, 1972-1976" (LA-6755-MS, Vols. I and II), "Publications of Los Alamos Research, 1977-1981" (LA-9435-MS, Vols. I and II), "Publications of Los Alamos Research 1982" (LA-9800-MS), and "Publications of Los Alamos Research 1983" (LA-10155-MS).

This bibliography is a compilation of unclassified publications of work done at Los Alamos National Laboratory for 1984. Publications not included in earlier compilations have also been listed. Declassification of previously classified reports is considered to constitute publication. All classified issuances are omitted—even those papers, themselves unclassified, which were published only as part of a classified document. If a paper was published more than once, all places of publication are included.

The bibliography includes Los Alamos National Laboratory reports, papers released as non-Laboratory reports, journal articles, books, chapters of books, conference papers either published separately or as part of conference proceedings issued as books or reports, papers published in congressional hearings, theses, and US patents. Publications by Los Alamos authors that are not records of Laboratory-sponsored work are included when the Library becomes aware of them.

The arrangement in each bibliographical citation is title first, place(s) of publication, indented, and authors, further indented. The CHEMICAL ABSTRACTS abbreviation is used for journal citations except for the capitalization. The group designations given after the authors' names indicate the groups with which the authors were associated when the papers were written. Parenthetical information includes report and reprint numbers, book call numbers, and patent numbers. The parentheses indicate the information by which Los Alamos borrowers may obtain the material from the Los Alamos Libraries.

The entries are arranged in sections by broad subject categories. Within each section they are alphabetical by title. All types of publications are interfiled.

The author and numeric indexes refer to the item numbers, which consist of a number designating the section followed by a dash and a number for the alphabetic arrangement of the item within the section. In the numeric index, the LA- and LA-xxxx-MS, etc., numbers of reports are interfiled.

A Keyword-in-Context index included in earlier compilations is not provided.

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The Libraries gratefully acknowledge the assistance of members of the Laboratory's Administrative Data Processing Division for assistance with the computerized system for handling publication information.

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