CMRR Report
Center for Magnetic Recording Research

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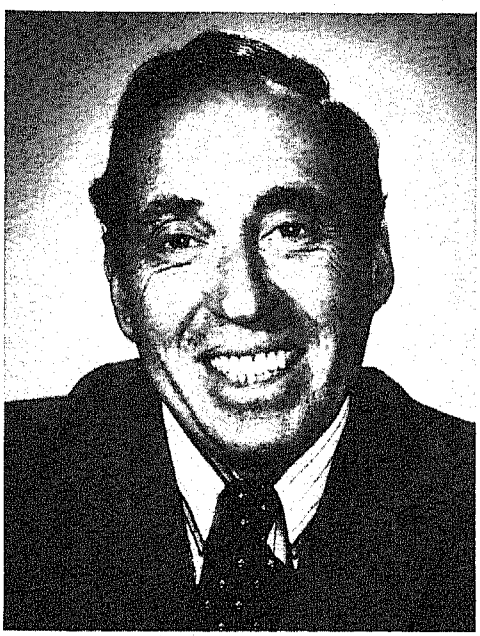

Jack K. Wolf

H. Neal Bertram

Drs. Wolf and Bertram appointed to endowed chairs

Two of four endowed chairs at The Center for Magnetic Recording Research were recently filled. Dr. Jack Keil Wolf, a renowned authority in the field of information theory took up his position in January. Dr. Wolf earned his Ph.D. in electrical engineering from Princeton University in 1960. Prior to his appointment as a professor in UCSD's Department of Electrical Engineering and Computer Sciences, Dr. Wolf held a professorship in the Department of Electrical and Computer Engineering at the University of Massachusetts, Amherst, serving as departmental chairman from 1973-1975. Over the past twenty years, Dr. Wolf has served as a consultant to government and industry including roles with the International Scientific Radio Union and the NATO Advanced Study Institute. Dr. Wolf is a fellow of the IEEE, serving as president of the Information Theory Group in 1974. He has been honored as an NSF Senior Fellow and a Guggenheim Fellow. A specialist in the area of statistical communications theory and algebraic coding theory with over ninety published papers, Dr. Wolf has more recently focused his research on problems related to magnetic storage and retrieval of information. UCSD's Dean of Engineering, M. Lea Rudee, praised Dr. Wolf as an information theorist of world standing.

Dr. H. Neal Bertram, appointed to the second chair at CMRR, was also appointed as professor in UCSD's Department of Electrical Engineering and Computer Sciences in February. Dr. Bertram is recognized both nationally and internationally for his work in magnetic recording research, specifically in the areas of metallic thin film media, vertical media, novel particulate media, magnetoresistive heads, thin film heads, noise and cross-talk, and archival storage. As an authority on the theoretical modeling of magnetic recording, Dr. Bertram is considered a world renowned expert. He received his Ph.D. in physics from Harvard University in 1968 and gained his professional experience at Ampex Corporation where he worked with CMRR's director, John Mallinson. In 1977 Dr. Bertram was appointed manager of the Recording Physics Section within the Advanced Technology Division, a position he held until he accepted the professorship at UCSD. Dr. Bertram is a senior member of the IEEE Magnetics Society and has helped to organize interactive workshops on magnetic recording. He published twenty-nine papers along with numerous technical reports and patents during his period at Ampex and has been invited to present a number of papers at magnetics conferences both here and in Europe.

New sponsor signed

A new corporate sponsor Ampex Corporation, a Signal Company, was recently added to the list of CMRR industrial supporters. Mr. Michael Felix was named as the Ampex representative to the Advisory Council of the Center. The full list of sponsors who have now pledged almost nine million dollars for the support of the Center includes: Digital Equipment Corp., Pfizer Inc., Verbatim Corp., Ampex Corp., Applied Magnetics Corp., Data Electronics, Inc., 3M, Seagate Technology, IBM, Kodak, National Micronetics Inc. and Peripheral Components, Inc. (M.P.I./Memorex Corp.).

From the director

The last three months has been a period of significant progress at CMRR. Jack Wolf, the first of our four endowed professors, is now in residence and is coming to grips with the magnetic recorder as a communication channel. He has organized a bi-weekly seminar series with the EE&CS and AMES departments and is, further, organizing a by-invitation-only workshop on "Modulation Coding & Signal Processing for Magnetic Recording Channels" to be held May 20-22. Neal Bertram, my friend and former colleague at Ampex, accepted the second professorship and will be at CMRR full-time from February 15. After some fifteen years of fruitful collaboration with Neal, I am absolutely delighted to have him at CMRR; his boundless enthusiasm for the theory of magnetic recording will be a great asset. As noted in the last CMRR REPORT, Shmuel Shtrikman of the Weizmann Institute of Science in Israel was appointed as adjunct professor at UCSD. Hendrik Ferreira, Rands Afrikaans University, spent six weeks at CMRR recently. During his visit, which will be repeated annually, Hendrik studied Class IV partial response (interleaved NRZ in the computer disc world) and additionally, studied the properties of some codes. Several other academic visitors to the Center include Jean-Marc Coutellier, University of Grenoble, and Rainer Rueppel, Institut für Fernmeldetechnik, Zurich. One of our industrial visitors, Dick Fayling, 3M, has been busy organizing an interactive workshop on "Wear and Lubrication Mechanisms in Magnetic Recording Systems" held in San Diego, February 24-27. This meeting endeavored to confront leading academics and industrial practitioners with the expectation that more science can be brought to bear upon wear and lubrication problems. Finally, I am delighted to announce that Ampex/Signal has become a sponsor of CMRR; after having lost Neal and me to CMRR, this is, indeed, a commendable action.

John C. Mallinson

Report on Soohoo research

A research project conducted by Professor Ron F. Soohoo of the University of California, Davis which was supported in part by a CMRR grant, looked at the micromagnetics of recording heads and media. As the area involved is a broad one, Professor Soohoo believes a three year period is needed before the project is completed. The long term objective is to study both the static and dynamic behavior of the magnetization in recording heads and media. At the end of its first year Professor Soohoo reports enthusiastically on progress made thus far. Four papers have been published based on the results achieved during this first year. Assisting Professor Soohoo were graduate students M.R. Oyler and F. Sherrima from the Department of Electrical and Computer Engineering at the University of California, Davis.

Professor Soohoo's research began with examining the micromagnetics of domain walls in vertical recording. He then carried out a theoretical and experimental study on demagnetizing and saturation effects in a tapered structure similar to that in thin film recording heads.

Professor Soohoo, a native of Kwangtung, China, obtained his Ph.D. in electrical engineering and physics from Stanford University in 1956. He has held a professorship at UC Davis since 1964 and acted concurrently as a consultant for a variety of research laboratories and corporations. Professor Soohoo is a Fellow of the IEEE and the A.I.P. and was honored with The Outstanding Teacher of the Year award by the College of Engineering, UC Davis in 1976. He has written numerous articles and chapters as well as having published a number of books.

Information center advisory group meets

On January 14 the Information Center Advisory Group met to discuss the role which the Center could play in disseminating information to the sponsoring companies and UC faculty engaged in magnetics-related research. Members of the group are *Neal Bertram, CMRR; Donald Fredkin, UCSD; Gordon Hughes, Seagate Technology; Denis Mee, IBM; John Simonds, Kodak; Dawn Talbot, CMRR* and *Kitty Morris, CMRR.*

Services which will be offered in the near future include routing the contents pages of relevant journals, provision of photocopies of requested articles from the UC collection, and retrospective literature searches of data bases offered through DIALOG, QUESTEL and INFOLINE. Some searches will be done on a monthly basis by the Information Center to determine what has been published in the area of magnetic recording technology.

Methods of accessing the Japanese scientific and technical literature were also discussed. There are a number of routes by which this might be achieved and these were outlined and discussed as to their viability. Other than the forthcoming *IEEE Translation Journal on Magnetics* and specialized publications such as *Japan Magnetic Trend* and *MIMS International Newsletter,* the Center has plans to access the Japanese database JOIS to monitor articles which do not appear in the aforementioned titles. This, together with accessing material which is indexed by the major American and European data bases should provide a fairly comprehensive coverage.

Plans are being formulated to provide translated articles to sponsoring companies from CMRR's Information Center which will essentially act as a clearing house. Such a service is seen as both time and money saving. When the mechanisms for such a service are worked out an announcement will be made in CMRR REPORT and in future INFORMATION CENTER BULLETINS.

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Bi-weekly seminar series

January 31 saw the first of a series of seminars to be held on alternate Thursdays at the Center, 3344 North Torrey Pines Court. Jack Wolf acts as coordinator for the series aimed at university faculty and graduate students. The first session on *Introduction to Magnetic Recording Systems* was given by the Center's director, John Mallinson. John also delivered the second seminar *Communications and Information Theoretical Limits in Magnetic Recording*. Future seminars will be given by UCSD faculty.

Graduate fellowship to Japan

Vincent Tobin, a graduate student in the Department of Physics at UCSD was awarded a graduate fellowship from CMRR to study in Japan. Funds for the fellowship were provided by the Polaroid Corporation. Mr. Tobin left in January to spend the winter and spring quarters at the Research Institute of Electrical Communication, Tohoku University, Sendai, Japan. He is studying with Professor K. Ouchi and will be working on CO-CR/Ni-Fe media.

Center awareness growing

Taking advantage of the Conference on Magnetism and Magnetic Materials being held in San Diego in November 1984, CMRR hosted a reception at the Town & Country Hotel attended by 300 delegates. This was an opportunity for CMRR staff to talk informally with guests about plans for the Center, and to distribute copies of an informative brochure outlining the Center's activities, together with the first issue of CMRR REPORT. Architectural drawings of the new building were also on display.

Dr. Donald Fredkin, UCSD professor in the Department of Physics recently spoke about his research related to Magnetic Recording at a seminar for faculty and graduate students held at San Diego State University's Department of Physics. In his talk entitled "A Theorist in the Land of Magnetic Recording," Dr. Fredkin discussed the theory of analog recording and specifically his theoretical and numerical work on the switching properties of clusters of acicular particles, and on hysteresis emphasizing the role of the interaction field. As well as providing an opportunity to publicize the field of magnetic recording to the academic community, it also provided publicity for the Center and the role it is playing with respect to magnetic recording research.

Academic visitor from South Africa

Hendrik Ferreira, from the Faculty of Engineering at Rand Afrikaans University in South Africa recently spent a six-week sabbatical at CMRR during December and January. Having spent two previous sabbaticals at Linkabit Corp. here in San Diego, Hendrik was able to quickly settle into his research. While at the Center, Hendrik worked on class 4 partial response. He hopes to return annually to work with CMRR faculty.

Program Highlights of the 23rd International Magnetics Conference

A technical program of considerable diversity has been organized for the 23rd International Magnetics Conference (INTERMAG) by the program committee under the chairmanship of R.M. Josephs (Naval Air Development Center) and H.N. Bertram (UCSD).

There will be 34 invited and 259 contributed talks covering the newest developments in all branches in magnetics. Approximately one third of the talks will be devoted to recording with topics such as media, heads, and systems being discussed. Other papers will describe the newest developments in fields such as magneto-optics, magnetic bubbles, permanent magnets (one session and a workshop on Nd-Fe-B), soft and amorphous magnetic materials, power devices, magnetic separation, magnetic bubbles (including Bloch line memory), eddy currents, magnetic measurements, magnetic microwave devices, magnetic calculations, and CAD. Papers on topics such as sensors, magnetocardiography, and implantable devices will be presented in a session devoted to magnetics in the life sciences.

The Plenary Address will be given by Dr. A. Frank Mayadas, IBM Research Division Vice President, Storage and I/O and Director of the IBM San Jose Research Lab. His talk, "Computer Storage and its Evolution" will highlight the events of INTERMAG '85.

A one-day tutorial on magnetic recording (registration: $50) will commence at 10 a.m. in the Minnesota East Room of the Radisson-St. Paul hotel on the Sunday preceding the conference.

The Education Committee of the Magnetics Society will sponsor an evening tutorial entitled "Domain Observations". The audience will have the opportunity to ask questions during the panel discussion that will follow formal presentations.

The conference, sponsored by the Magnetics Society of the IEEE, is open to all persons subject to a registration fee of $120 ($110 prior to March 29) for IEEE members, $150 ($140 prior to March 29) for non-members, and $10 for students and retirees. Registration will begin in the lower lobby of the Radisson-St. Paul Hotel from the hours of 8 a.m. to 11 a.m. and 4 p.m. to 8 p.m. on Sunday, April 28.

Individuals not on the conference mailing list may obtain information by contacting either the Conference Chairman, R.O. McCary, General Electric Company, Corporate R&D, Schenectady, NY 12345, (518) 385-5436, the Publicity Chairman, J.A. Nyenhuis, Purdue University, School of Electrical Engineering, West Lafayette, IN 47907 (317) 494-3524, or Diane S. Suiters at Courtesy Associates, Inc., 655 15th St. NW, Suite 300, Washington, DC 20005, (202) 347-5900.

Your cooperation sought

The Information Center is anxious to obtain printed material from workshops, seminars, conferences, etc. held in Japan. If you are visiting Japan and have the opportunity to collect any such material relevant to the magnetic recording field, please contact Dawn Talbot at CMRR's Information Center. Where appropriate, the Center will arrange for translation. The magnetics community will be made aware that the Information Center holds this material.

Info access '85

On Wednesday March 27, 1985 the UCSD Science Libraries and the School of Medicine's Office of Learning Resources will present Info Access '85; Online Information Management and Retrieval for the Scientist. Building on last year's successful program on do-it-yourself online searching, Info Access '85 will explore new trends in online resources available to scientists from their own microcomputers or terminals. Participants will learn about full text and non-bibliographic online databases, packages and systems designed to simplify access to online files, microcomputer software for personal files management, and bibliographic file management software available on UCSD campus computers.

The program will be repeated in morning and afternoon sessions; an exhibit area will be open throughout the day. Presentations will be made by Peter Wagner, Professor of Medicine, UCSD, campus science librarians Peter Brueggeman, Margaret Klinkroth and Beverly Renford, and Susan Sullivan from the UCSD Computer Center. In the exhibit area, participants will be able to examine software packages and microcomputer hardware. New this year will be scheduled demonstrations of selected software packages for file management and systems designed to simplify access to online files.

For attendees at last year's program, Info Access '85 offers new information on the many software packages designed for information retrieval and management which have become available in the last year. Those who were unable to attend last year will be able to use this opportunity to evaluate multiple search systems and equipment before deciding on which system best suits their information requirements. A fee of $15 will be charged; a $10 pass is available for those who wish to visit the exhibits only. For further information, contact Susan Farmer at the UCSD Biomedical Library, 452-3418, or pick up a brochure at the UCSD Biomedical, SIO, CMRR or Science and Engineering Libraries.

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CALENDAR

March 17-21	International Conference on Video, Audio & Data Recording, Sussex, England
March 21	Magnetics Society San Diego Chapter Meeting. Room 111A, Administrative Complex, UCSD, 7:00-9:00 P.M. Speaker: Neal Bertram, CMRR
March 27	InfoAccess '85. (See announcement.)
April 25	Magnetics Society San Diego Chapter Meeting, Room 111A, Administrative Complex, UCSD, 7:00-9:00 P.M. Speaker: Bill Doyle, Kodak
Apr. 29-May 2	Intermag '85. St. Paul, Minnesota (See announcement.)
May 16	Magnetics Society San Diego Chapter Meeting. Room 111A, Administrative Complex, UCSD.7:00-9:00 P.M.
May 19-22	Invited Workshop on Modulation, Coding & Signal Processing for Magnetic Recording Channels. Jack Wolf, Coordinator.
June 3-5	MMA '85. Magnetic Materials for Applications, Grenoble, France
June 3-6	COMPUMAG, Fort Collins, Colorado
June 20	Magnetics Society San Diego Chapter Meeting. Room 111A, Administrative Complex, UCSD.7:00-9:00 P.M.

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