

Preface

The study of nonlinear systems and dynamics has emerged internationally as a major area of interdisciplinary research over the last two decades. In India there are a number of groups actively involved in research in this area. Need was being felt for a forum where active researchers in this area can meet periodically — to report new experiments and theoretical developments, to examine hypotheses to explain physical phenomena, and to discuss common problems faced by people working in this field.

The First National Conference on Nonlinear Systems & Dynamics, organized by the Centre for Theoretical Studies, IIT Kharagpur, marks the beginning of that process. With 92 accepted papers and more than 120 registered participants, this conference shows that the nonlinear dynamics research community in India has reached the “critical mass” at which a periodic conference is truly warranted.

Since this was the first national conference in this area, the Organizing Committee had the added responsibility of setting the model. It is known that in the international conference circuit, various formats exist. After much deliberation, it was decided to place maximum emphasis on contributed original papers, with proper peer-review process. It is expected that with this emphasis, the future conferences will see many first-rate breakthroughs coming from Indian scientists being reported in an NCNSD first, before being communicated to journals.

A conference is basically a forum where people working in related areas meet and get exposed to the results obtained by others, the lines of approach followed, and the difficulties faced — *through direct contact between participants*. Conferences are therefore supposed to be the breeding ground for new ideas. The organization of a conference should strive to ensure that the participants get more benefit in attending a conference, than what he or she could get out of simply reading papers. The key, therefore, lies in maximizing the interaction.

With this view, we have also ventured to create a new model in this conference: the “Interactive Session.” It differs in many ways from the standard “poster session” format. First, in many conferences original experiments are reported, but the partici-

pants get to see only the final results. They generally have no way of cross-examining the experiments, and have no scope of learning by observing the experiment being performed in real time. The same is true for numerical experiments.

We felt, much is to be learnt from the ways of the earlier Royal Society meetings, where scientists had to perform the experiments before the audience. Sir J. C. Bose had to carry his apparatus across the globe to demonstrate his experiments. Most of the famous experiments of Michael Faraday were demonstrated live. This way the participants could directly check the correctness of some experimental result, could cross-examine, and could learn from the way it is performed. Unfortunately, this style of exposition that evolved in the scientific world, had taken back-seat over the course of the last century, mainly because the experimental apparatus became more and more complicated, and impossible to carry.

But we work in a field in which many experiments are performed at the corner of a table, and there is no reason why one cannot carry it to a conference venue within the country. Many of us work with numerical experiments, and there is no reason why these cannot be subjected to direct scrutiny by fellow workers in a field. Moreover, over the past few years videography has become affordable, and this should bring in a new era of experimental demonstration — where experiments performed with heavier equipment can be filmed and shown to the fellow workers at conferences.

Somebody had to initiate the new model of conference presentations made possible by the changed technological scenario. And we decided to do it.

We have made it a point to allocate papers to the interactive sessions not based on any judgment on the quality of the paper. The allocation was solely based on the recommendation of the reviewer regarding the desirability of a demonstration and cross-examination of a piece of work by fellow participants in an interactive mode.

True, in the first NCNSD, many participants may be unexposed to the new format. But the exposure in course of this conference will help workers in the

field to make presentations with a greater impact in the future NCNSDs.

In the Oral Sessions, in contrast to the international conference standard of 10-15 minutes, we decided to allow a full 30 minutes for each presentation. This, however, forced us to go for parallel sessions — which might make some participants miss some lectures of interest. We just had to choose the lesser evil.

In this conference we have specially encouraged students of bachelor's and master's levels to submit papers. The main objective of introducing the Student Paper section was to encourage young minds to take up research in nonlinear dynamics. The response has been very good, as reflected by the 13 student papers presented at this conference. The review process made sure that all the student papers accepted for presentation at the NCNSD-2003 contain some new knowledge. We are indeed proud that some student papers are of such high quality that it is practically impossible to distinguish them from the rest of the papers.

We were aware that in the minds of a section of the Indian academia, the purpose of a conference has been significantly distorted. Many see conferences as platforms for getting some leverage out of sub-standard work, as media for fattening one's publication list without going through the grind of a peer-review process. Many even consider it unnecessary to physically present papers at conferences — to face the scrutiny of fellow workers in the field. If scheduled papers are not presented, all planning for equitable distribution of presentation time get disturbed.

In view of this, we took some measure to ensure that all papers published in the Proceedings go through a peer-review process, and are presented at the conference. We know, the hard and fast rules of the game did not please everybody, and a small number of papers initially submitted were later withdrawn. But the reader of the Proceedings can rest assured that all papers that have found place here deserved it.

In the end what we have is a volume that we have every reason to be proud of. It is the result of a teamwork of the young and enthusiastic people associated with the Centre for Theoretical Studies. Many authors submitted the papers in such form that were nowhere close to the specified format. I commend the untiring effort of Dr. Debaprasad Giri, Dr. S. Pratik Khastgir, and Mr. Ujal Halder in giving them a presentable shape. I thank Dr. Somnath Bharadwaj, Dr. Sayan Kar, Dr. Sushan Konar for

their deft handling of the various organizational aspects of the conference. The services of Mr. Akhilesh Singh deserve a special mention because, despite several other responsibilities, he volunteered to work outside the office hours for the conference. His rich experience with organizing conferences pulled us through many difficult situations.

We have made some change in the division of the papers into the subject categories at the time of the production of the Proceedings, because in some cases the authors wanted to move their papers from one subject class to another, and in some cases we felt it proper to change the initial allotment of papers depending on their actual content.

The conference could not be successful without the shouldering of responsibility by the members of the Local Organizing Committee, namely Dr. A. Dasgupta, Dr. K. Kumar, Dr. C. S. Kumar, Dr. S. Sarbadhikari, Dr. S. P. Khastgir, and Dr. D. Giri. They deserve my sincere gratitude for the valuable service rendered.

Sincere thanks are also due to the funding agencies and organizations who provided the necessary financial support without which the organization of the conference at such a small registration fee would have been impossible.

Last, but not the least, I thank the members of the National Organizing Committee who have enriched the conference by offering timely and constructive suggestions and advice. We sincerely hope the flag will be carried to make the subsequent National Conferences on Nonlinear Systems & Dynamics grand success.

Dated: The 12th of December, 2003

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