

notion of injecting words from English and other foreign languages, as many people envision it as a solution, has been strongly rejected by the present author by means of a comparative study of the languages. For example, the Bengali translation of the word 'isomer' fails to pinpoint the actual scientific phenomenon. As a consequence, coining of meaningful appropriate terminologies is an unavoidable task. What he had to say is that an apparently correctly translated terminology in a language may not be compatible with the language in some application areas. Each language has its own style of expression to convey a particular meaning. Thus, in Kuuk Thaayorre language used in Western Cape York Peninsula of Australia's Queensland State, the position of a monument or an important place is expressed in cardinal directions, i.e. the instructions do not use words like left and right, instead it uses terms like East, West, North, Northeast, North-northeast.

In German language, a bridge is described by feminine words like beautiful or elegant, whereas

the Spanish language uses masculine terms like strong, long, etc. In English, constructions like 'He broke the flower vase' or 'He broke his arms' are customary, widely used and accepted. Many languages do not approve such constructions as the events were accidental. In keeping with reality, a Spanish people writes "The vase broke". In addition to these abstract discussions, the reviewer also created in his article a series of science terminologies in Bengali.

In this short discussion, it is not possible to accommodate all the interesting features of the book. However, the organization of the seminar and the publication of the book are undoubtedly noble acts of promoting science education in Bengali. It will definitely encourage others in this direction. In future more and more such publications and improvements in the learning of advanced science through texts written in Bengali will be a reality.

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Conference Report

Report of the "Professor M R Gupta Memorial National Seminar"—2019

The 'Advanced Centre for Nonlinear and Complex Phenomena' (ACNCP) and Centre for Plasma Studies in collaboration with the Department of Mathematics, Jadavpur University, with financial assistance from the family members of Late Professor M. R. Gupta organized a National Seminar as a memorial tribute to the departed mathematician. It was held on the 6th August, 2019 at the Department of Mathematics of Jadavpur University.

The 'Inaugural Session' (Session I) started at 10-30 A.M. and was chaired by Professor Shamik Ghosh, Head of the Department of Mathematics,

Jadavpur University. The proceedings started with an opening song by Dr. Sima Chakrabarti. Flower bouquets were presented to the Chairman of the Session, the Chief Guest and Mrs. B. Gupta (wife of late Professor M. R. Gupta). Some introductory remarks were made by Professor R. Bhar of Jadavpur University. Professor Rajkumar Roychoudhury, Professor Nikhil Chakrabarti, Professor Ujjwal Sen and the family members of Late Professor Gupta reminisced about the departed mathematician. After that the Chairman of the session gave a brief talk. The 'Vote of thanks' was delivered by Professor Alaka Das.

The Session II started at 11:00 A.M. The session was chaired by Professor Rajkumar Roychoudhury. This year the ‘*Memorial Lecture*’ was delivered by Professor Ujjwal Sen of Harish-Chandra Research Institute (HRI), Allahabad. The speaker was an ex-student of Professor M. R. Gupta from the Department of Applied Mathematics, University of Calcutta and had completed his M. Sc. from there in 1997. The title of his ‘*Memorial Lecture*’ was ‘*ENTANGLEMENT IN QUANTUM STATES: MEANING, PROPERTIES AND APPLICATIONS*’.

In his delivered talk, Professor Sen stated that entanglement was one of the key properties that acted as the diesel for several quantum-enabled machines. He discussed the meaning of entanglement in quantum states of shared systems from a fundamental perspective. He also indicated the non-classical applications that it led to.

Professor Sen said that though entanglement was monogamous, classical correlations were not. While quantum states could have more local disorder than global, classical states always satisfied the opposite. In his lecture, he tried to assert with reasoning that such non-classical properties of entanglement led it to be employed for non-classical applications such as quantum teleportation and dense coding.

After the talk ended, the honorable speaker was presented a memento by the organizers of the seminar. This was followed by a tea-break.

In the pre and post lunch sessions, five young research scholars presented their contributed papers. They were as follows:

- (i) Sayantan Dutta [Department of Physics, Institut Denis Poisson, UMR CNRS 7013, Université de Tours, France] presented a paper titled “*Classical signal and image processing methods inspired from quantum mechanics*”. In the lecture, he talked about a completely new approach for classical data signal processing, in particular, about signal or image denoising, using an adaptive transform constructed by quantum mechanical tools. In the work, the signal or image dependent transform was obtained by considering the signal or image as a potential in the discretized Schrödinger equation. To illustrate the method he presented denoising results in the case signal-independent noise (e.g., Gaussian noise, salt and pepper noise) and signal-dependent noise (e.g., Poisson noise, speckle noise). In this way, he showed that their considered new method was especially useful for signal-dependent noise. The group of Sayantan Dutta have also investigated the choice of parameter for which their method turned out to be most efficient.
- (ii) Debdatta Debnath [Department of Mathematics, Jadavpur University] talked on “*Ion acoustic solitary structures at the acoustic speed in collision-less magnetized nonthermal plasma*”. Using a theory developed in 2012 by Das et. al, she presented an investigation on the ion acoustic solitary structures at the acoustic speed in a collision-less magnetized dusty plasma consisting of negatively charged static dust grains, adiabatic warm ions and non-thermal electrons. The Sagdeev’s pseudo-potential technique was used to draw the compositional parameter spaces. Finally, she has shown the phase portraits of the dynamical system describing the nonlinear behavior of the ion-acoustic waves at the acoustic speed to confirm the existence of different solitary structures including double layers and super-solitons at the acoustic speed. She also demonstrated various supportive properties of the system described by her under different physical conditions.
- (iii) Pritikana Bhandari [Department of Mathematics, Jadavpur University] presented a paper titled “*Thermodynamical Study for Inhomogeneous Two-fluid model*”. In her lecture she presented a detailed thermodynamical study for the FLRW-type model of the Universe bounded by a horizon with three possible modifications of Bekenstein-Hawking formulation of thermodynamical parameters namely entropy and temperature. For the first choice of the validity of the thermodynamical system she with her colleagues have examined both the first law of thermodynamics (FLT) and the generalized second law of thermodynamics (GSLT). Also, the integrability conditions for

the exact one-forms in both thermodynamical laws have been analyzed by them and they have found that they are consistent with each other. She has also presented some important results for the other two choices.

(iv) Abhijit Mandal [Department of Mathematics, Jadavpur University] delivered a talk titled "*Thermodynamical Study of Black Holes in dRGT Massive Gravity*". He said that he with his colleagues had carried out studies on thermodynamics and geothermodynamics of spherical black hole solutions in dRGT massive gravity. They had performed a thermodynamical analysis to reveal the existence of a critical behavior for black holes in dRGT massive gravity with different critical points through canonical and grand-canonical ensembles. They also observed the phase transition of the black holes under dRGT massive gravity. They claimed that they successfully evaluated the Ehrenfest equation to understand the phase transition.

(v) Sudipto Bhattacharjee (Department of Mathematics, Jadavpur University) delivered a talk titled Role of cosmological matter creation phenomena on the dynamics of a collapsing star.

In his presentation, the collapse dynamics of a spherically symmetric massive star in the framework of non-equilibrium thermodynamic prescription through cosmological matter creation mechanism has been studied. He has assumed the thermodynamic system to be adiabatic so that the effective bulk viscous pressure is linearly related to the cosmological matter creation rate. Consequently, the evolution of the collapsing star also depends on the choice of cosmological matter creation rate. By suitable choice of creation rate as a function of the Hubble parameter, he found that the end state of the collapse may be either a black hole (BH) or a naked singularity (NS).

To encourage the young scientists a panel of experts was formed to assess and reward the

two best papers presented. The panel of judges consisted of (1) Prof. Prasanta K. Mukherjee, (2) Prof. Nikhil Chakrabarti, (3) Prof. S. B. Dutta Choudhury and (4) Dr. Anjana Sinha. According to the recommendations of the panel of experts, the best paper award was given to Sayantan Dutta. He received a cash prize of Rs. 5000/- and a memento. The second best paper award was given to Pritikana Bhandari. She received a cash award of Rs. 3000/- and a memento.

The memorial seminar was well attended, and fruitful scientific discussions were on during the presentations. This was truly a rich tribute to Late Professor M. R. Gupta, who always enjoyed scientific interactions with young students and helped them to the best of his ability.

At the last part of the Seminar, the Annual General Meeting of the Advanced Centre for Nonlinear & Complex Phenomena (ACNCP) took place. Secretary of the Centre Dr. Amar Prasad Misra presented the Annual Report of the Centre for 2018-2019. The report was discussed by the members, and they made some suggestions for enhancing the academic activities of the Centre. Members also stressed for attracting more young researchers and Faculty members to become members of the Society. Audited Statement of Accounts of the ACNCP for the financial year 2018-2019 was placed by the Treasurer of the Centre, Prof. Manoranjan Khan before the members of the AGM and it was unanimously accepted.

I convey my sincere thanks to Professor Manoranjan Khan of the Jadavpur University, Kolkata and Dr. Amar Prasad Misra of the Visvabharati University, Shantiniketan, for their kind help and assistance during the preparation of the report.

(A few photographs are printed in back inside cover)

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