

## LECTURE-WORKSHOP ON STATISTICAL MECHANICS A BRIEF REPORT

A 3day lecture-workshop on " statistical mechanics" was conducted at Nehru Arts & Science College, Kanhangad, Kasaragod (Dt)-Kerala from 15-17 July 2011. The workshop was jointly sponsored by Indian Academy of Science, Bangalore, The National Academy of Sciences India, Allahabad and Indian National Science Academy, New Delhi and in collaboration with Department of Physics, Nehru Arts & Science College, Kanhangad. Prof M Lakshmanan of the Bharathidasan University was the convener. Dr.K.M.Udayanandan, Associate Professor of the Department of Physics, Nehru Arts & Science College, Kanhangad acted as the Local Coordinator of the workshop.

On 15<sup>th</sup> July morning, Prof. M. Lakshmanan , Bharathidasan University inaugurated the program me which was chaired by the College Principal Prof K Narayanan. After the inauguration, Prof Lakshmanan took class on Hamiltonian Dynamics, Chaos and Statistical Aspects: An Overview . He showed how chaos is related to statistical mechanics. The class was very informative.

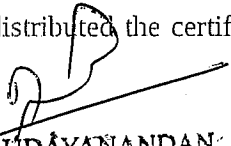
In the second session Prof K P N Murthy of the Central University of Hyderabad delivered lecture in " Basic ideas of Statistical Mechanics /Ensembles/ Partition Function/ Various Features of the three Ensembles and Comparison". He showed that all ensembles are in general equivalent. The class was very useful to both the teachers and student participants.

On 16<sup>th</sup> morning Dr. R. Rajesh, Associate Professor of the Institute of Mathematics, Chennai took class about " Formulation of Quantum Statistical Mechanics, B-E & F-D Statistics and Phase Transitions". He introduced Ising model and also phase transition. He also explained various aspects of quantum statistics.

In the after noon there were two sessions. In the first session Prof .V. Balakrishnan of IIT Madras took class on Random Walk and Brownian Motion. He explained diffusion and Brownian motion". Prof Balakrishnan continued his classes in the next session on Non equilibrium Statistical Mechanics: An Introduction . His class was very impressive and a new experience to all the participants. On July 17<sup>th</sup> morning Prof Chandan Das Gupta of the Indian Institute of Science Bangalore delivered his lecture on cluster expansion. He showed how Vander wals equation for a non ideal gas is obtained using Mayer's cluster expansion. In the second session he talked on Ising Model and Lattice Gas.

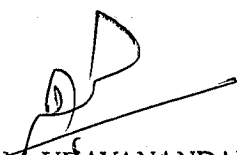
In the afternoon session, Prof KPN Murthy in his session cleared the doubts of the participants. He gave an insight in to various aspects of statistical mechanics. His class was very interesting.

In the valedictory function Prof KPN Murthy was the Chief guest. M Sreelekha HOD of the Department of Physics chaired. Prof KPN Murthy distributed the certificates among the participants.

  
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Local coordinator Dr KM Udayanandan delivered the vote of thanks.

There were 107 participants including teachers of various colleges under Kannur, Calicut and Central University of Kerala. Very good refreshments were arranged at the end of each session. The 3 day seminar was really a new experience of its kind in the Northern part of Kerala.



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## Time Table

Day 1 (15 July 2011):

### 11.00 AM Inaugural Function

#### Morning session

11.30AM-1.00PM

Talk 1 Hamiltonian Dynamics, Chaos and Statistical Aspects: An Overview  
(Prof. M. Lakshmanan - 1 Lecture)

#### Afternoon session

2.00- 5.30 PM with a tea break at 3.30 PM

Talks 2 & 3: Basic ideas of Statistical Mechanics /Ensembles/ Partition  
Function/ Various Features of the three Ensembles and Comparison  
(Prof.K .P. N. Murthy - 2 Lectures)

Day 2(16 July 2011):

#### Morning session

9.30-1.00 with a tea break at 11.00 AM

Talks 4 & 5: Formulation of Quantum Statistical Mechanics, B-E & F-D  
Statistics and Phase Transitions  
(Dr.R Rajesh - 2 Lectures)

#### Afternoon session

2.00- 5.30 PM with a tea break at 3.30 PM

Talk 6: Random Walk and Brownian Motion (Prof. V. Balakrishnan)  
Talk 7: Non equilibrium Statistical Mechanics: An Introduction  
(Prof. V. Balakrishnan 2 Lectures )

Day 3(17 July 2011)

#### Morning session

9.30-1.00 with a tea break at 11.00 AM

Talk 8: Statistical Mechanics of Interacting Systems  
Talk 9: Ising Model and Lattice Gas  
(Prof. Chandan Dasgupta 2 Lectures )


#### Afternoon session

2.00- 3.30 PM with a tea break at 3.30 PM

Talk 10: Basic doubts in Statistical mechanics  
(Prof KPN Murthy 1 lecture)

3.30 PM

### Valedictory function

  
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