

Updated 25 August 2010

WORKSHOP ON SPONTANEOUS ENERGY FOCUSING PHENOMENA AND MULTISCALE PHYSICS

30 AUGUST - 3 SEPTEMBER 2010, NEC Auditorium, NTU, SINGAPORE

Day 1 Program: 30 August 2010 (Monday)

Chairman: **Berge Englert**

08:00-08:30 am Arrival of Guests

08:30-08:40 am Opening Address by **Phua Kok Khoo, Director, IAS**

08:40-08:50 am Welcome Address by Guest of Honour **Bertil Andersson, Provost, NTU**

08:50-09:00 am Speech by **Seth Putterman, Vice President, JSF**

09:00-09:50 am **Mark Eberhart** (Colorado School of Mines)

How Things Break

09:50-10:40 am **Vikram Deshpande** (University of Cambridge)

Explosive Interactions of Granular Media with Structures

10:40-11:00 am

Coffee Break

11:00-11:50 am **Dana Diott** (University of Illinois)

Ultrafast Dynamics of Impact Chemistry: Initiation to Detonation

11:50-12:40 pm **Jay Fineberg** (Racah Institute of Physics and Hebrew University of Jerusalem)

The Story of Fast Fracture: Is fracture all that it is cracked up to be?

12:40-02:30 pm

Lunch

Chairman: **Mark Eberhart**

02:30-03:20 pm **Ken Suslick** (University of Illinois at Urbana-Champaign)

Sonoluminescence or The Chemical History of a Bubble (with Apologies to Michael Faraday)

03:20-03:50 pm

Coffee Break

03:50-09:30 pm **Guided Tour of Singapore, followed by dinner**

End of Session

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Day 2 Program: 31 August 2010 (Tuesday)

Chairman: Kwek Leong Chuan

09:00-09:50 am **Wilhelm Becker** (Max-Born-Institut)

Atoms in Strong Laser Fields

09:50-10:40 am **Seth Putterman** (Julian Schwinger Foundation and University of California at Los Angeles)

Spontaneous Energy Focusing Phenomena

10:40-11:00 am

Coffee Break

11:00-11:50 am **Vladimir Rakov** (University of Florida)

Compact Intracloud Lightning Discharges

11:50-12:40 pm **Tim Koeth** (University of Maryland)

An Investigation into the Discharge of a Lichtenberg Figure

12:40-02:30 pm

Lunch

Chairman: Seth Putterman

02:30-02:50 pm **Dennis Polla** (DARPA)

Understanding SERS Enhancement - A DARPA Perspective

02:50-03:40 pm **Alfred Vogel** (University of Lübeck)

Energy Density, Temperature, and Pressure upon Spherical Cavitation Bubble Collapse Compared to Femtosecond and Nanosecond Optical Breakdown

03:40-04:10 pm

Coffee Break

04:10-06:30 pm **Lab Visit on NTU Campus**

07:00-09:30 pm

Dinner

End of Session

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Day 3 Program: 1 September 2010 (Wednesday)

Chairman: Jack Ng

09:00-09:50 am **Daniel Lathrop** (University of Maryland)

Quantum Turbulence

09:50-10:40 am **Marco C. Velli** (Jet Propulsion Lab, NASA)

From Coronal Heating and Solar Wind Acceleration to Flares and Coronal Mass Ejections: Reconnection, Turbulence and Self-Organization

10:40-11:00 am

Coffee Break

11:00-11:50 am **Rajdeep S. Rawat** (Nanyang Technological University)

Miniature Dense Plasma Focus Devices

11:50-12:40 pm **Alexei Khokhlov** (University of Chicago)

Combustion and Explosion in Supernovae and in Terrestrial Gaseous Systems

12:40-01:30 pm

Lunch

01:30-06:30 pm **Lab Visit on NUS Campus**

06:30-07:00 pm **Transfer to dinner venue**

07:00-10:00 pm **Conference Dinner (by invitation only)**

End of Session

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Day 4 Program: 2 September 2010 (Thursday)

Chairman: **Wilhelm Becker**

09:00-09:50 am **Farhang Radjai** (Université Montpellier)
Force Chains in Polydisperse Granular Media

09:50-10:40 am **Weinan E** (Princeton University)
The Mathematics and the Physics of the Moving Contact Line Problem

10:40-11:00 am **Coffee Break**

11:00-11:50 am **Karoly Holczer** (University of California at Los Angeles)
Shrinking Solid State Physics to Atomic Scales: Challenges of Nano-Technology and Scanning Probe Microscopy

11:50-12:40 pm **Oskar Painter** (California Institute of Technology)
Radiation Pressure at the Nanoscale

12:40-02:30 pm **Lunch**

Chairman: **Daniel Lathrop**

02:30-03:20 pm **William P. King** (University of Illinois)
Nanometer-Scale Thermal Processing with a Heated Probe Tip

03:20-04:10 pm **Kerson Huang** (Massachusetts Institute of Technology)
Self-focusing in a Bose-Einstein Condensate with Attractive Interactions

04:10-04:50 pm **Coffee Break**

04:50-05:10 pm Contributed Talk
Raymond Ooi (University of Malaya)
Electrodynamics With Superintense Laser Field

05:10-05:30 pm Contributed Talk
Tung Roh-Suan (IAS, Nanyang Technological University)
From Rarita-Schwinger to Einstein Equations

05:30-07:00 pm **Free Time**

07:00-09:30 pm **Dinner**

End of Session

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Day 5 Program: 3 September 2010 (Friday)

Special Session "Remembering Julian Schwinger"

Chairman: Lester DeRaad

09:00-09:50 am **Berge Englert** (Julian Schwinger Foundation and National University of Singapore)
The Legacy of Weyl and Schwinger: Mutually Unbiased Bases

09:50-10:40 am **Kimball A. Milton** (University of Oklahoma)
The Casimir Effect--How Julian Schwinger's Legacy Has Grown

10:40-11:00 am **Coffee Break**

11:00-11:50 am **Jack Ng** (Julian Schwinger Foundation and University of North Carolina)
From Schwinger's Scalar-Tensor Theory of Gravity to Spacetime Foam

11:50-12:40 pm **Daniel M. Greenberger** (City University of New York)
Time, Proper Time, and Mass in Quantum Mechanics

12:40-02:30 pm **Lunch**

Chairman: Kimball A. Milton

02:30-03:20 pm **Herbert Fried** (Brown University)
Analytic, Non-Perturbative, Gauge-Invariant QCD

03:20-04:10 pm **Tung Mow Yan** (Cornell University)
Schwinger and Magnetic Monopoles

04:10-04:20 pm **Seth Putterman** (Vice President, Julian Schwinger Foundation)
Closing Remarks

04:20-04:40 pm **Coffee Break**

04:40-07:00 pm **Free Time**

07:00-09:30 pm **Dinner**

End of Program

We wish all a safe journey home!