Australian Institute of Physics (SA branch)

http://www.physics.adelaide.edu.au/aip-sa

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AIP-SA STUDENT NIGHT

at 7:30pm, Tuesday July 25th 2000

in the Kerr Grant Lecture Theatre
Physics Building, Adelaide University

The 1999 Silver Bragg medals, awarded for highest achievement in the final undergraduate year of a Physics degree, will be presented. Three speakers, one from each SA University, will give a talk on their postgraduate research work in Physics:

"A Relativistic Model of Pion-Nucleon Scattering"

by Andrew Lahiff

of the *School of Chemistry, Physics and Earth Sciences, Flinders University of South Australia*

Pion-nucleon scattering is an important example of a strong interaction, and as such plays a significant role in many nuclear reactions involving pions. In this talk a relativistic description of pion-nucleon scattering based on the four-dimensional Bethe-Salpeter equation will be presented.

"Radar Velocity Studies in Meteor Astronomy"

by Daniel Badger

of the *Dept. of Physics and Mathematical Physics, Adelaide University*

For thousands of years people have been watching meteors, or shooting stars, but only recently has information come to light about where they originate, why they behave the way they do, and whether we can predict their coming. This talk will present some of the latest research on meteor shower structure and velocities, including evidence of meteoroids which originated outside our solar system, and when the next meteor storm is likely to occur.

"Nano-Bubbles and Computer Simulations of Surface Tension"

by Michael Moody

of the *Ian Wark Research Institute, University of South Australia*

The existence of sub-microscopic bubbles in water is controversial since the Laplace-Young equation predicts that bubbles of this size would be highly unstable. However if the surface tension is significantly dependent on the radius of curvature, then sub-microscopic bubbles would be theoretically more feasible.

A Monte Carlo computer simulation technique has been used to measure the surface tension of the planar liquid-vapour interface of a Lennard-Jones 12-6 fluid. The density profile of this two phase system and the coexistence pressure are calculated. The temperature dependence of the surface tension, densities and pressure have also been measured and the results are presented. Also outlined is a technique to measure curvature dependence of surface tension through the insertion of a cavity into a homogenous liquid.

Non-members, particularly undergraduate students, are invited to attend.