

# COLLOQUIUM

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## New Results on Frictional Contact with Adhesion

### **Abstract**

We describe new models and results on contact with friction, adhesion and wear. First, we describe a simplified model for an automotive braking system. The thermal aspects of frictional contact are included, since considerable heat is generated in the process. Then, we describe a new model for the adhesive contact between a membrane and an obstacle. We present the classical and variational formulations of the model, state the existence and uniqueness result, indicate the ideas in the proof, and describe a numerical algorithm for the problem and its error estimates. We shortly mention the problem of vibrations of a beam with a slider and show interesting numerical simulations of the model. Finally, a new problem of adhesion and wear, arising in bone-implants, will be discussed.

**372 Science and Engineering Building**

**Thursday, January 24th, 2002**

**3:00 to 4:00 P.M.**

**(Refreshment at 2:30 to 3:00 P.M. in Room 368,  
Science and Engineering Building)**

**About the speaker**

Dr. Meir Shillor earned all his degrees from the Hebrew University of Jerusalem: B.Sc. in 1973, M.Sc. in 1976 and Ph.D. in 1982. He held various positions at Oxford University, University of Buenos Aires, Imperial College and Claremont Graduate School before coming to Oakland University in 1988. Since 1988, he had visited University of Kentucky, University of Perpignan, France and University of Reunion, France at various time. Professor Shillor has over 80 published articles, and he is interested in Modeling of Industrial Processes, Thermoelastic Dynamic Contact with Friction or Lubrication Free Boundary Problems, Stefan Problems Dynamical Systems, Hysteresis Noise and Vibrations as well as Partial Differential Equations and Variational Inequalities.