962-A0-35 **Robert F. Almgren*** (`almgren@math.toronto.edu`), University of Toronto, Department of Mathematics, 100 St. George Street, Toronto, ON M5S 3G3, Canada. *Financial derivatives and PDEs.*

It is a remarkable fact that pricing and managing financial derivative contracts depends, in many realistic cases, on solving a parabolic partial differential equation with a free boundary. We will discuss the probabilistic modeling that gives rise to the diffusion equation, how finite-difference methods are used in practice to solve it accurately and rapidly, and how the results compare to actual market data. We will discuss the free boundary problem and its connection to optimal control. We will consider exotic options, for example barriers and the boundary conditions they impose, and how Asian options they may be modeled within the finite difference framework. Finally, we will discuss how the parabolic model may be extended to take account of real market statistics, and the models to which such extensions lead. (Received June 28, 2000)