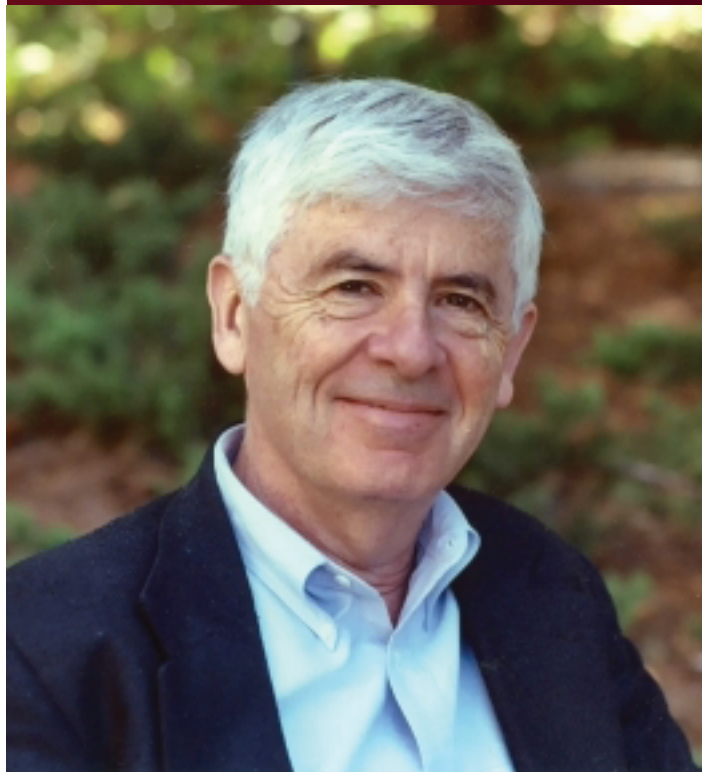


# Sir James Lighthill Distinguished Lectureship

*Provost Lawrence G. Abele established the Sir James Lighthill Distinguished Lectureship Award to honor leaders in mathematical sciences and to attract them to visit the Florida State University to give lectures, inspire students and interact with the faculty and students.*



## ALEXANDRE J. CHORIN University Professor, Department of Mathematics University of California, Berkeley

Alexandre Chorin obtained his PhD from New York University in 1966 and stayed on as a research scientist at the Courant Institute of Mathematical Sciences until 1969. Then he became an assistant professor at the Institute and was promoted to associate professor the following year. During 1971-72 he was a Visiting Miller Professor at the University of California, Berkeley, and subsequently joined the Mathematics Department as an associate professor. He was promoted to full professor in 1974. In 2002 he was named to the prestigious University Professorship. He is a member of the National Academy of Sciences and a fellow of the American Academy of Arts and Sciences. Among his honors is the National Academy of Sciences' Award in applied mathematics and numerical analysis, and the Norbert Wiener Prize of the American Mathematical Society and the Society for Industrial and Applied Mathematics. He has trained and mentored four generations of students, some of whom have gone on to become leaders in their own right.

## Public Lecture: Prediction and Optimal Prediction

**Wednesday, November 4, 2009 - 4:00 p.m.**

**Alumni Center Ballroom**

*Refreshments will be served at 3:30 p.m.*

There are many problems in science (for example, in climate modelling or in economics) where one has to make long-range forecasts on the basis of uncertain models and data that are noisy and incomplete. I will present a mathematical analysis of how this can be done optimally. One moral of this presentation will be that in practice many predictions are invalidated, not only by the incompleteness of the models and the data, but also by the use of plausible but erroneous mathematical assumptions to simplify computations.

## Engineering, Meteorology & Oceanography Lecture: Non-Bayesian Particle Filters

**Tuesday, November 3, 2009 - 3:35 p.m.**

**101 Love Building**

*Refreshments will be served at 3:00 p.m. in 353 Love Building.*

Filtering and data assimilation are indispensable tools in engineering, weather forecasting, and other areas where one has to make predictions on the basis of uncertain models supplemented by a stream of uncertain data. In nonlinear problems such filtering can be excessively laborious. I will present a scheme, related to chainless sampling, that tames the amount of labor. Its main features are a representation of each new probability density by a set of functions of Gaussian variables (a distinct function for each sample and each step), and a resampling based on normalization constants. Examples will be given.

## Mathematics Lecture: Monte Carlo without Chains

**Friday, November 6, 2009 - 3:35 p.m.**

**101 Love Building**

*Refreshments will be served at 3:00 p.m. in 204 Love Building.*

Monte Carlo methods are stochastic computing methods which are indispensable in the solution of problems with very many variables. They are almost always based on Markov chains, for good reasons that I will briefly recapitulate. There are many problems, however, where Markov chain Monte Carlo is too slow, and I will present a faster alternative based on renormalization group ideas, with examples from physics.

*For more information please log onto <http://www.cespr.fsu.edu/lighthill/lectureship.html> or call (850) 644-0601.*



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