Research Interests

B. A. Taylor

My current research deals with problems in two different areas of complex analysis. The first concerns local and global questions about the validity of Phragmen-Lindelof type estimates for plurisubharmonic functions on algebraic varieties while the second concerns questions that arise in the analysis of random walks. There are open questions of pure mathematics, of algorithim development, and of numerical analysis in both of these areas.

The largest unsolved problem in the first area is to give a geometric characterization of the algebraic varieties on which such Phragmen-Lindelof theorems hold. For the case of one dimensional varieties the answer is "hyperbolic varieties". For the case of two dimensional varieties, the answer (not yet published) is "varieties that are hyperbolic in conoids". In addition to the general question, there are many unanswered related questions involving extremal plurisubharmonic functions that remain open.

The second area, the analysis of certain random walks, arose because of connection with certain problems in queueing theory. It's an area where we would like to know both algorithms for solving explicit problems and also answers to some rather abstract problems, such as describing the Martin boundary for some of these random walks. There are also interesting questions about the iteration of matrix valued holomorphic maps.

I'm also interested in the study of the structure of the closed ideals in topological algebras of entire functions such as the space of entire functions of exponential type. These latter questions are closely related to the many open questions of interpolation and approximation in several complex variables. I haven't done any research in the area recently (i.e. for 20+ years) but new results in the intervening years have opened up some quite interesting geometric questions.

Mathematics graduate students interested in any of these areas are invited to talk with me. You may either drop by my office (4858 East Hall) or make arrangements to see me by e-mail (taylor@umich.edu). Some information, like my some years old publication list, is also available on my sadly out-of-date web page .