Title: Padé approximants for functions with branch points

Abstract: I will attempt to explain the following set of ideas. Let f be a germ of an analytic function at infinity that can be analytically continued along any path in the complex plane deprived of a finite set of points, $f \in \mathcal{A}(\overline{\mathbb{C}} \setminus A), \quad \sharp A < \infty$. J. Nuttall has put forward the important relation between the *maximal domain* of f where the function has a single-valued branch and the *domain of convergence* of the diagonal Padé approximants for f. The Padé approximants, which are rational functions and thus single-valued, approximate a holomorphic branch of f in the domain of their convergence. At the same time most of their poles tend to the boundary of the domain of convergence and the support of their limiting distribution models the system of cuts that makes the function f single-valued. Nuttall has conjectured (and proved for many important special cases) that this system of cuts has *minimal logarithmic capacity* among all other systems converting the function f to a single-valued branch. Thus the domain of convergence corresponds to the *maximal* (in the sense of *minimal* boundary) domain of single-valued holomorphy for the analytic function $f \in \mathcal{A}(\overline{\mathbb{C}} \setminus A)$. The complete proof of Nuttall's conjecture (even in a more general setting where the set A has logarithmic capacity 0) was obtained by H. Stahl.