1003-94-1508 **V. Vatchev*** (`vatchev@math.sc.edu`), USC, Columbia, SC 29201, and **R. Sharpley**. *The Analysis of Intrinsic Mode Functions and Instantaneous Phase.*

Intrinsic Mode Functions (IMF's) are the basic functions for a decomposition of 1-D signals through the Empirical Mode Decomposition (EMD) method. The EMD method was introduced by N. Huang and his collaborators in 1996 and since then it has been highly successful in analyzing both mathematical and physical properties of signals in a number of disciplines. The IMFs produce highly nonlinear redundant decompositions from which the analysis is done by using the Hilbert transform.

This talk will discuss recent work of the speaker and R. Sharpley on characterization of IMF's as solutions to Sturm-Liouville equations and related mode classification through a Prufer quadrature method. A comparison of quadrature methods and the Hilbert transform method for computing instantaneous phase is performed using extremely nice signals (both discrete and in closed form) for which the analytic phase is non-monotone. (Received October 05, 2004)