1004-42-265 **Derek Bruff*** (`bruff@fas.harvard.edu`), Department of Mathematics, One Oxford Street, Cambridge, MA 02138. *Several Multiwavelet Bases Centered on Nonuniform Knot Sequences.* Preliminary report.

A traditional wavelet basis generated by the shifts and dilations of a single wavelet can be considered to be "centered" on the knot sequences $\{a^j\}_{j\in\mathbb{Z}}$, where $a^j = \{i2^{-j}\}_{i\in\mathbb{Z}}$. These knot sequences possess both shift-invariant uniformity, that is, the points in each knot sequence a^j are uniformly spaced, and scale-invariant uniformity, that is, the knot sequence a^{j+1} can be constructed in a uniform manner from the knot sequence a^j. In this talk, we present techniques for constructing generalized multiwavelet bases centered on nonuniform knot sequences, that is, knot sequences lacking one or both of shift-invariant uniformity or scale-invariant uniformity. Several such multiwavelet bases will be presented. (Received January 25, 2005)