

1056-S1-1334 **Phil Gustafson*** (pgustafs@mesastate.edu), Mathematics Department, Mesa State College,
1100 North Ave, Grand Junction, CO 81501-3122. *Portable Haar Wavelet Projects with
MATLAB*. Preliminary report.

Haar wavelet projects are suitable for use in a variety of undergraduate mathematics courses, and serve as a great way to introduce students to an interesting and current application of mathematics. The relative simplicity of discrete Haar wavelets make them accessible to students with only a basic familiarity of matrix algebra. Using microphones and digital cameras, student-generated audio and image files can readily be processed with MATLAB programs to illustrate concepts such as signal thresholding and compression. This talk will highlight the use of Haar wavelet projects in an undergraduate topics course on Fourier analysis. These projects are designed to illustrate the importance of different expansions in the representations of functions and signals, and to bring students closer to modern applications of mathematics in our digital world. These projects can be readily adapted for use in courses such as calculus, linear algebra, and mathematical modeling, as well as serving as a starting point for senior research experiences. (Received September 21, 2009)