

**Meeting:** 1003, Atlanta, Georgia, MAA CP B1, MAA Session on My Favorite Demo: Innovative Strategies for Mathematics Instructors, I

1003-B1-371      **Steven M. Hetzler\*** (SMHetzler@Salisbury.edu), Department of Mathematics & Computer Science, Salisbury University, 1101 Camden Ave., Salisbury, MD 21801, and **Robert M. Tardiff** (RMTardiff@Salisbury.edu), Department of Mathematics & Computer Science, Salisbury University, 1101 Camden Ave., Salisbury, MD 21801. *Sonification to Reinforce Graphics*. Preliminary report.

“Sonification is the use of non-speech audio to convey information.” [1, p. 2] Pitch, amplitude, timbre, and location are characteristics of sound that can be used to represent mathematics. Sonification can be used to exploit students’ auditory learning skills/styles, to discover properties of relations not readily apparent in graphs, and to allow for the representation of higher-dimensional data sets. We will demonstrate how we use sonification in three classroom applications: statistical graphics, orbit diagrams for dynamical systems, and convergent sequences and series. We will demonstrate the process of creating sonifications, using available shareware and using software we have developed. Finally, we will outline two interesting mathematical problems in producing sonifications: positioning a sound in space to create an “audio graph” of a relation, and modulating the pitch of a sound to demonstrate change in and rate of change of the value of a function.

1. Kramer, Gregory, Walker, Bruce, et. al. “Sonification Report: Status of the Field and Research Agenda.” Prepared for the National Science Foundation by members of the International Community for Auditory Display. 1997. <http://www.icad.org/websiteV2.0/References/nsf.html> (Received September 13, 2004)