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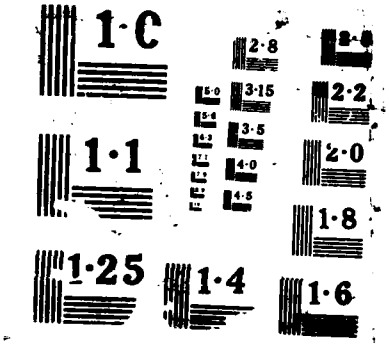
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16 SUPPLEMENTARY NOTATION
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17 COSATI CODES			18 SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	Human hearing; psychophysics; instrumentation.
1.1			
1.2			

19 ABSTRACT (Continue on reverse if necessary and identify by block number)

Five items of equipment were acquired under this instrumentation grant: a filter system for audio waveforms, a two channel audio synthesizer, a two track recorder, a two channel FFT system, and a sound spectrograph. All are used in a laboratory devoted to the relationship between acoustic features and auditory perception. Keywords:

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Report AFOSR-86-0304 (Instrumentation Program)

MECHANISMS MEDIATING THE PERCEPTION OF COMPLEX ACOUSTIC PATTERNS

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14 August 1987

Final Technical Report

Prepared for
AIR FORCE OFFICE OF SCIENTIFIC RESEARCH
Building 410
Bolling Air Force Base, DC 20332-6448

Richard M. Warren
AFOSR Grant No. 86-0304

Final Technical Report

Each piece of equipment purchased with the funds provided by this Instrumentation Grant has been used in several experiments conducted under AFOSR Research Grant 85-0260, "Mechanisms mediating the perception of complex acoustic patterns." None of the equipment is dedicated to any particular experimental paradigm, and all items have had a wide general usage in several experiments. I will describe how one experiment has made use of each of the items purchased under the equipment grant.

I have been examining the perception of complex tones mistuned from unison as one of the topics of my AFOSR funded research. These tones were repeated on the digital delay segment of the comb filter, the number of harmonics passed was under the control of the high-low filter system, and the temporal shaping controlled by the Coulbourn shaping system. The extent of mistuning of tones was accomplished by the dual channel synthesizer used as an accurate clock to govern the repetition rate of the stored waveforms. The two-channel FFT analyzer permitted examination of the harmonic structure of the two complex tones simultaneously, as well as measuring the fundamental frequencies. The spectrographic display permitted a direct examination of the spectral interaction occurring when the complex tones were mixed, as well as providing a hard copy record of this stimulus. The various perceptual phenomena observed (pitch glides, complex beats, etc.) depended upon the frequency components present, and the stimuli were band-passed, low-passed, and high-passed using the filters purchased under the grant to determine the spectral requirements for the phenomena under investigation. Finally, these stimuli are difficult to prepare, and the high-quality two-track recorder permitted storage and regeneration of the stimuli when desired.

Attached is a list of the equipment budgeted under the grant, including the manufacturer, model and cost of the equipment purchased.

Budgeted Equipment:

Filter	
$20,739.00	
Dual Channel Synthesizer	10,215.00
Two Track Recorder	8,163.00
Two channel FFT Analyzer	17,113.00
Speech Spectrographic Display	13,770.00
	$70,000.00

Equipment Ordered:

Filtering System:	$17,672.97
Wavetek Hi/Lo Filter 852 ($11,573.58)	
Eventide Digital Comb Filter H969 ($4,109.71)	
Coulbourn Temporal Shaping Filter Sys. ($1,989.68)	
Hewlett Packard Dual Channel Synthesizer HP3326A	10,240.00
Otari 2-track Recorder w/ Autolocator MTR 10-C-L	6,595.13
Two Channel FFT Analyzer System:	21,573.20
Tektronix 2-Channel Digital Storage Unit ($5,873.20)	
Brüel & Kjaer 2-Channel Analyzer 2034 ($15,700.00)	
Kay Elemetrics Spectrograph SSD 8800	13,932.30
	$70,013.60*

*The $13.60 overage was paid by the University of Wisconsin-Milwaukee Graduate School.

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