2:30

1pAO5. Calibration trials with multibeam sonars. Dezhang Chu, Kenneth G. Foote (Woods Hole Oceanogr. Inst., Woods Hole, MA 02543), Kenneth C. Baldwin, Larry A. Mayer, Andrew McLeod (Univ. of New Hampshire, Durham, NH 03824), Lawrence C. Hufnagle, Jr. (Northwest Fisheries Sci. Ctr., Seattle, WA 98112), J. Michael Jech, and William Michaels (Northeast Fisheries Sci. Ctr., Woods Hole, MA 02543)

A series of calibration trials have been performed with several multibeam sonars by means of the standard-target method. These have included multiple units of the Simrad SM2000 Multibeam Echo Sounder operating at 90 or 200 kHz, with external transmitter in each case. The principal measurements have been of the full two-dimensional directivity characteristics of the main lobes. Issues of sensitivity, linearity, dynamic range, and near-field effects have also been studied. [Work supported by NSF Grant No. OCE-0002664.]

2:45

1pAO6. A new multibeam echo sounder/sonar for fishery research applications. Lars Nonboe Andersen, Sverre Berg, Erik Stenersen, Ole Bernt Gammelsaeter, and Even Borte Lunde (Simrad AS, P.O. Box 111, N-3191 Horten, Norway, fish_research@simrad.com)

Fisheries scientists have for many years been requesting a calibrated multibeam echo sounder/sonar specially designed for fishery research applications. Simrad AS has, in cooperation with IFREMER, France, agreed on specifications for a multibeam echo sounder and with IMR, Norway for a multibeam sonar, and contracts were signed for development of such systems in January 2003. The systems have 800 transmitting and receiving channels with similar hardware, but different software, and are characterized by narrow beams, low-sidelobe levels, and operate in the frequency range 70–120 kHz. The echo sounder is designed for high operating flexibility, with 1 to 47 beams of approximately 2°, covering a maximum sector of 60°. In addition, normal split beam mode on 70 and 120 kHz with 7° beams for comparison with standard system is available. The sonar will be mounted on a drop keel, looking horizontally, covering a horizontal sector of ±30°, and a vertical sector of 45°. Total number of beams is 500, 25 beams horizontally with a resolution of ~3°, and 20 beams vertically with a resolution of ~4°. Both systems are designed for accurate fish-stock assessment and fish-behavior studies.

3:00

1pAO7. Midwater acoustic modeling for multibeam sonar simulation. Bart Buelens, Ray Williams, Arthur Sale (School of Computing, Univ. of Tasmania, Sandy Bay Campus, Hobart 7005, Tasmania, Australia, bart@sonardata.com), and Tim Pauly (Sonardata Pty. Ltd., Tasmania, Australia)

Simulation and modeling software has been developed to generate synthetic midwater multibeam data. Essentially, the simulator can be considered as a virtual test tank. In order to develop multibeam data analysis methods for fisheries research, it is essential to have a variety of test data sets available, which are ground truthed, georeferenced and corrected for vessel motion. Since equipment and ship time are expensive and data quality not always guaranteed, the simulator provides an effective alternative. The seabed and any objects in the water column such as fish and fish schools can be defined in a 3-dimensional space. A specification for a generic linear array multibeam sonar and its position in space and time can be chosen. The acoustic model implements the technique of acoustic ray-tracing to obtain the pressure at the transducer face, which is converted to individual samples by modeling the working of a digital multibeam system. Beamforming is performed on the fly, and both raw and beamformed complex data sets are generated. Current research on model validation, calibration and analysis techniques will be presented along with an outline of planned future research.

MONDAY AFTERNOON, 10 NOVEMBER 2003 — SAN ANTONIO ROOM, 1:30 TO 5:15 P.M.

Session 1pED

Education in Acoustics and Musical Acoustics: Neat Acoustics Websites and Software for Teaching Musical Acoustics

Uwe J. Hansen, Cochair
Department of Physics, Indiana State University, Terre Haute, Indiana 47809

Thomas D. Rossing, Cochair
Physics Department, University of Illinois, DeKalb, Illinois 60115

Invited Papers

1:30

1pED1. Acoustics and vibration animations: A surprisingly successful website. Daniel Russell (Sci. & Mathematics Dept., Kettering Univ., 1700 W. Third Ave., Flint, MI 48532-4898)

For the past 8 years the author has been creating mathematically and physically correct computer animations for use in teaching acoustics to advanced undergraduate engineering and science majors [D. Russell, J. Acoust. Soc. Am. **106**, 2197 (1999)]. Compiling these animations, along with supporting text, on a web site (http://www.kettering.edu/~drussell/demos.html) has resulted in a surprising response from students, teachers, and professionals who have found the animations useful for their own presentations, study, or courses. Unsolicited recognition in the form of web awards and coverage in magazines adds weight to the usefulness of well-made animations for conveying difficult concepts to a wide audience. This presentation will showcase as many of the animations as possible,