

Imaging Methods and Apparatus Using Multi-Point Model-Based Array Signal Processing

This new method has been developed to undertake underwater 3D acoustic imaging and mapping of the seafloor. This approach differs from conventional imaging methods in that beamforming is replaced by direction-of-arrival estimation. Beamforming offers poor resolution when the imaging geometry can be modelled with a finite number of discrete directions of arrival. Sonar manufacturers can employ the CAATI technology to build more cost-effective sonars and improve the capabilities of their existing products.

Areas of Application

This technology has widespread applications for industries ranging from underwater vehicle navigation capabilities to medical ultrasound imaging. This technology could provide large cost benefits to the submarine cable installation and the offshore oil and gas exploration industries for ocean survey, defense, air traffic control, meteorological, recreational and commercial boating in side-scan, sector, forward-looking sonar and radar.

Competitive Advantages

This technology enables an inexpensive solution for high-resolution 2D and 3D real-time image processing utilizing a small array. It shortens surveying time while increasing resolution over multibeam systems. It resolves multipath and provides accurate shallow-water bathymetry in comparison with interferometry.

Stage of Development

A functional prototype has demonstrated excellent field test results.

Intellectual Property Status

US Patent #6,130,641 issued October 10, 2000.

Business Opportunity

The field of use for side scanning has been licensed to a US Company. An SFU spin-off company, PING DSP Inc., has been created to develop the technology for other fields of use.

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