

SIGNAL PHYSICS DIVISION (SPD)

SPD operates in the dynamic arena of signal and information processing and analysis. Work in this field is grounded in an understanding of the physics of signals and noise, including their generation, propagation, and reception. Such understanding is acquired through a balanced research program involving data collection and analysis combined with synergistic basic research.

Historically, SPD's work has focused on underwater acoustics, primarily for the U.S. Navy. More recently, our sponsor base has expanded to include U.S. government law enforcement and intelligence agencies. These efforts involve a combination of basic research, algorithm development, system prototyping/validation, and full-scale data acquisition and measurement systems. SPD has also been active in Fleet support activities, including sonar system and operator evaluation; operator training; and data collection, reconstruction, and analysis in support of Fleet exercises.

In addition, SPD is involved in acoustics research for industrial and medical applications. Examples include acoustically enhanced methods for removing particulate matter (soot) and mercury from the exhaust streams of coal-fired power plants, thermoacoustic (i.e., heat-driven) motors and electric generators, acoustically enhanced chem/bio detectors, and theoretical models for medical ultrasound. The division is currently researching the use of ultrasonic acoustics to manipulate and process bubbles in body tissue to achieve non-invasive surgical effects.

For further information regarding the work being done in SPD, please contact:

Director-SISL@arlut.utexas.edu



**Deploying the PLUSNet vector sensor
array recorder developed by SPD**