

## **ACOUSTICS2008/3514**

### **Estimation of received acoustic levels in the near-field of a ship**

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Measured acoustic levels at the face of a receiver in close proximity to a ship in shallow water can differ substantially from the levels predicted by applying standard propagation models to a source level determined from a far-field radiated noise measurement. At distances typical of mine-ship engagements, the dimensions of the source (ship) can be large with respect to range, ocean depth and acoustic wavelength, and the ship cannot be approximated as a single point source, nor is the receiver necessarily located outside the acoustic near field. Direct free-field measurements of ship radiated noise at short range are problematic, so that the received acoustic level in the near-field of a ship must be estimated from other available information. Options for generating such estimates are presented, including a hybrid approach combining empirically-derived transfer functions, a virtual distributed- source representation of the ship, and in-situ hull vibration measurements. The potential for computational methods such as BEM - FEM and measurements such as Nearfield Acoustic Holography to provide an improved understanding of the vibration sources, structural responses, radiation mechanisms and propagation paths associated with the radiated noise field of realistic ship structures is also explored. (Work sponsored by ONR Code 331).