

Structured Session: Shallow Water Acoustics

Underwater Acoustic Field Control Based on Vertical Directional Emission

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In both shallow and deep waters, the characters of underwater sound field are significantly affected by the vertical angular distribution of sound energy. In shallow water, the vertical directivity of source will dominate the excitation intensity of normal modes-the main components in the far field-which in turn influence the sound field even in all respects: the total transmission loss of the sound field, the degree of influence of seabed parameters, the level of reverberation strength and so on. In deep sea, the vertical directivity of source will govern the emitted rays and then affect the spatial distribution of acoustic intensity, for example the bottom reflective rays or the total refractive rays can vanish according to need. The fact is that even the simplest vertical directional emission system combined by two separated point sources which work respectively in-phase and anti-phase can control the sound field effectively. Some experimental results in shallow and deep waters are introduced.

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