



Wavefront modelling and low frequency ray theory

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ABSTRACT

Wavefront modelling arises from a solution of the wave equation which expresses the acoustic field as a sum of a series of phase integrals. Each phase integral is directly linked to ray paths with a given sequence of reflections or turning points. Asymptotic evaluation of the phase integrals gives the amplitude, phase and arrival time of pulses from an acoustic source which can be used to construct the waveform at a receiver. The results apply everywhere including near caustics and acoustic shadow zones and show that ray theory can be used at low frequencies. Recent developments in wavefront modelling including reflection from moving surface waves will be discussed.