

Green's functions of wave equations in $\mathbb{R}_+^n \times \mathbb{R}_+$

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In this talk we implement the LY algorithm, and introduce the Rayleigh surface wave operators, delayed/advanced mirror images, wave recombinations, and wave cancellations to obtain the Green's functions for the d'Alembert equation with respect to various boundary conditions. We have obtained the complete and simple formula of the Green's functions for the wave equation with the presence of various boundary conditions. We have identified whether a Rayleigh surface wave is active or virtual. Finally, we apply our theorem for the case with virtual Rayleigh surface wave to study the lacunas of the wave equation in 3D with the presence of boundary.