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Tomography, wave equation and symplectic geometry

`Abstract:` A simple integral transformation will be defined in the set of functions defined on a sphere $B(0, \mathbb{R})$ in the euclidean 3-space. To find the inverse transformation formula, the symplectic structure in the space of solutions of the wave equation will be used. Our problem sheds new light on the singular initial-value problem and the Trautman- Bondi theory of radiation.