

THE JACOBI WEIGHTED RAY TRANSFORM

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We study completeness of products of three harmonic functions on conformally transversally anisotropic manifolds (CTA) as well as products of three solutions to the wave equation on general Lorentzian manifolds. This question has many applications in the study of inverse problems for various nonlinear PDEs. Previously, completeness results have been obtained for products of four solutions on very general Lorentzian and CTA manifolds. In the case of products of three solutions, we show that the completeness question can be reduced to studying injectivity for certain weighted transforms on rays with weights that are related to Jacobi fields along the ray. Finally, we show that these transforms can be inverted along a **single** ray. The talk is based on a joint work with Lauri Oksanen.