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Fourier-Helgason transform as infinite geodesic time limit in quantization

We give a geometric quantization interpretation of the Fourier-Helgason (FH) transform for Riemannian symmetric spaces of noncompact type, $X = G/K$.

First, we show that Lisiecki's horizontal polarization is the infinite time limit of the pushforward of the vertical polarization with respect to the geodesic flow for a G–invariant Riemannian metric.

Then we lift the geodesic flow to an intertwining unitary parallel transport on the quantum bundle that we call quantum geodesic transform (QGT). Finally we show that the QGT has a well defined limit as the geodesic time goes to infinity and that is equivalent to the FH transform.

On work in collaboration with A.C. Ferreira, J. Hilgert and J.P. Nunes