



THE GAUSS RADON TRANSFORM

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Abstract

In this work, we extend the usual Radon transform [J. Radon, Über die Bestimmung von Funktionen durch ihre Integralwerte längs gewisser Mannigfaltigkeiten, Berichte Sächsische Akademie der Wissenschaften Leipzig Math. Nat. Kl. 69 (1917), 262-277] to the Gaussian measure. We develop a Support Theorem for this new Gauss-Radon transform and also several inversion formulas. We also prove a connection between the Gauss-Radon transform and a conditional expectation. Lastly, we develop a new means of inversion for the original Radon transform using the Gauss-Radon and Segal-Bargmann transforms.

Keywords and phrases: Radon transform, Gaussian measure, conditional expectation.

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