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Rawat, Rama, Bar-Ilan University, Israel

Pompeiu problem and L^p analogues of Wiener-Tauberian for certain homogeneous spaces

Let E be a bounded Borel subset of $\mathbb{R}^n, n \geq 2$, of positive Lebesgue measure and P_E the corresponding "Pompeiu transform". We discuss the injectivity of P_E on certain $L^p(\mathbb{R}^n)$ spaces. We go on to make connection between this problem and a Wiener-Tauberian type theorem for the Euclidean motion group action on $L^p(\mathbb{R}^n)$. We also discuss a similar result for the Heisenberg motion group action on $L^1(H^n)$, where H^n is the n-dimensional Heisenberg group.

References: 1. *The injectivity of the Pompeiu transform and L^p- analogues of the Wiener-Tauberian theorem*, Rama Rawat and A. Sitaram, Israel J. of Math, 91(1995), 307-316.

2. *A theorem of the Wiener-Tauberian type for $L^1(H^n)$*, Rama Rawat, Proc. Indian Acad. Sci. (Math. Sci.), Vol 106, No. 4, Nov(1996), 369-377.