## RESTRICTION AND DECAY FOR FLAT HYPERSURFACES

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Abstract \_\_\_\_

In the first part we consider restriction theorems for hypersurfaces  $\Gamma$  in  $\mathbb{R}^n$ , with the affine curvature  $K_{\Gamma}^{1/(n+1)}$  introduced as a mitigating factor. Sjőlin, [19], showed that there is a universal restriction theorem for all convex curves in  $\mathbb{R}^2$ . We show that in dimensions greater than two there is no analogous universal restriction theorem for hypersurfaces with non-negative curvature.

In the second part we discuss decay estimates for the Fourier transform of the density  $K_{\Gamma}^{1/2}$  supported on the surface and investigate the relationship between restriction and decay in this setting. It is well-known that restriction theorems follow from appropriate decay estimates; one would like to know whether restriction and decay are, in fact, equivalent. We show that this is not the case in two dimensions. We also go some way towards a classification of those curves/surfaces for which decay holds by giving some sufficient conditions and some necessary conditions for decay.

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