1172-42-84 **Daniel Eceizabarrena*** (eceizabarrena@math.umass.edu), Department of Mathematics and Statistics, University of Massachusetts Amherst, Amherst, MA 01003, and **Felipe Ponce-Vanegas**. *Pointwise convergence over fractals for dispersive equations with homogeneous symbol.*

Let $P \in C^\infty(\mathbb{R}^n \setminus \{0\})$ be a real, homogeneous and non-singular symbol and the dispersive equation

$$i\,\partial_t u + P(D)u = 0, \qquad u(x,0) = f(x). \tag{1}$$

For $\alpha \in [0,n]$, we tackle the α-almost everywhere convergence problem; that is, for which $s > 0$ do we have

$$\lim_{t\to 0} u(x,t) = f(x), \qquad \alpha\text{-a.e.} \qquad \forall f \in H^s(\mathbb{R}^n) \quad ? \tag{2}$$

We prove that:

- For general P, convergence holds if $s > (n-\alpha+1)/2$.
- This is optimal: there are $\alpha \leq n$ and saddle-like symbols with counterexamples with $s < (n-\alpha+1)/2$.
- If P has dispersion and $\alpha < n/2$, then $s > (n-\alpha)/2$, and this is optimal.
- If $P(\xi) = \xi_1^k + \ldots + \xi_n^k$, $k \geq 2$ an integer and $\alpha < n$, we give counterexamples. This is a generalization of the recent work by An, Chu, Pierce for $\alpha = n$. Main difficulties are dealing with Weil sums and computing the Hausdorff dimension of the divergence sets. For the latter we use a mass transference principle from Diophantine approximation.

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