1150-03-289 **Peter A Cholak*** (cholak@nd.edu), 255 Hurley, Department of Math, Notre Dame, IN 46556.
Thin sets and the Preservation of Hyperimmunities. Preliminary report.

Let c be a coloring of n-tuples (of $\mathbb{N}$) by finitely many colors. For l less than the number of colors, a set T is *l-thin* iff c uses at most l colors to color all the n-tuples from T. The statement such a thin set exists for all colorings is called $RT^n_{<\infty,l}$. A function $f : \mathbb{N} \to \mathbb{N}$ is *hyperimmune* if it is not dominated by any computable function. A problem P *admits the preservation of p hyperimmunities* if, for every set Z and every collection $\{f_s : s < p\}$ of Z-hyperimmune functions, every instance $\mathcal{I}_{\mathsf{P}} \leq Z$ of P has a solution $\mathcal{S}_{\mathsf{P}}$ such that, for every $s < p$, f_s is $Z \oplus \mathcal{S}_{\mathsf{P}}$-hyperimmune. If the property holds for every P-instance, that is, not only Z-computable instances, then we say that P admits *strong* preservation of p hyperimmunities.

Conjecture: $RT^n_{<\infty,p^nC_n}$ admits the strong preservation p hyperimmunities and, moreover, this bound is tight, where C_n is the nth Catalan number.

In this talk we will discuss this conjecture and other related results and conjectures. This is joint work with Ludovic Patey. (Received July 11, 2019)