**Publicacions més rellevants de la línia de recerca:**

# Teoria de conjunts

**Referència:** Asperó, D. Guessing and non-guessing of canonical functions. *Annals of Pure and Applied Logic*, **146 (2-3)** (2007), pp. 150–179.

**Abstract:** It is possible to control to a large extent, via semiproper forcing, the parameters $(\beta_0, \beta_1)$ measuring the guessing density of the members of any given antichain of stationary subsets of $\omega_1$ (assuming the existence of an inaccessible limit of measurable cardinals). Here, given a pair $(\beta_0, \beta_1)$ of ordinals, we will say that a stationary set $S \subseteq \omega_1$ has guessing density $(\beta_0, \beta_1)$ if $\beta_0 = \gamma(S)$ and $\beta_1 = sup\{\gamma(S^*) : S^* \subseteq S,\ S^* \text{ stationary}\}$, where $\gamma(S^*)$ is, for every stationary $S^* \subseteq \omega_1$, the infimum of the set of ordinals $\tau \leq \omega_1 + 1$ for which there is a function with $ot(F(\nu)) < \tau$ for all $\nu \in S^*$ and with $\{\nu \in S^* : g(\nu) \in F(\nu)\}$ stationary for every $\alpha < \omega_2$ and every canonical function $g$ for $\alpha$. This work involves an analysis of iterations of models of set theory relative to sequences of measures on possibly distinct measurable cardinals. As an application of these techniques I show how to force, from the existence of a supercompact cardinal, a model of $PFA^{++}$ in which there is a well-order of $H(\omega_2)$ definable, over $H(\omega_2)$, by a formula without parameters.

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**Referència:** Bagaria, J. and Di Prisco, C. A. Parameterized partition relations on the real numbers. *Arch. Math. Logic*, **48** (2009), pp. 201–226.

**Abstract:** We consider several kinds of partition relations on the set $\mathbb{R}$ of real numbers and its powers, as well as their parameterizations with the set $[\mathbb{N}]^{\mathbb{N}}$ of all infinite sets of natural numbers, and show that they hold in some models of set theory. The proofs use generic absoluteness, that is, absoluteness under the required forcing extensions. We show that Solovay models are absolute under those forcing extensions, which yields, for instance, that in these models for every well ordered partition of $\mathbb{R}^{\mathbb{N}}$ there is a sequence of perfect sets whose product lies in one piece of the partition. Moreover, for every finite partition of $[\mathbb{N}]^{\mathbb{N}} \times \mathbb{R}^{\mathbb{N}}$ there is $X \in [\mathbb{N}]^{\mathbb{N}}$ and a sequence $\{P_k : k \in \mathbb{N}\}$ of perfect sets such that the product $[X]^{\mathbb{N}} \times \prod_k^{\infty} P_k$ lies in one piece of the partition, where $[X]^{\mathbb{N}}$ is the set of all infinite subsets of $X$. The proofs yield the same results for Borel partitions in $ZFC$, and for more complex partitions in any model satisfying a certain degree of

generic absoluteness.

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**Referència:** Lopez-Abad, J. and Todorčević, S. A $c_0$-saturated Banach space with no long unconditional basic sequences. *Trans. Amer. Math. Soc.*, **361 (9)** (2009), pp. 4541–4560.

**Abstract:** We present a Banach space $\mathfrak{X}$ with a Schauder basis of length $\omega_1$ which is saturated by copies of $c_0$ and such that for every closed decomposition of a closed subspace $X = X_0 \oplus X_1$, either $X_0$ or $X_1$ has to be separable. This can be considered as the non-separable counterpart of the notion of hereditarily indecomposable space. Indeed, the subspaces of $\mathfrak{X}$ have "few operators" in the sense that every bounded operator $T : X \to \mathfrak{X}$ from a subspace $X$ of $\mathfrak{X}$ into $\mathfrak{X}$ is the sum of a multiple of the inclusion and a $\omega_1$-singular operator, i.e., an operator $S$ which is not an isomorphism on any non-separable subspace of $X$. We also show that while $\mathfrak{X}$ is not distortable (being $c_0$-saturated), it is arbitrarily $\omega_1$-distortable in the sense that for every $\lambda > 1$ there is an equivalent norm $|||\cdot|||$ on $\mathfrak{X}$ such that for every non-separable subspace $X$ of $\mathfrak{X}$ there exist $x, y \in S_X$ such that $|||x|||/|||y||| \geq \lambda$.

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