▸ NICOLÁS CUERVO OVALLE, *Computable presentations of randomizations.*
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Randomizations were introduced first by Keisler in [3], and then axiomatized in the continuous setting by Ben Yaacov and Keisler in [1]. Informally, a randomization of a first-order (discrete) model $\mathcal{M}$ is a two-sorted metric structure consisting of an event sort and a functions sort, usually interpreted as random variables. For a complete first-order theory T, the associated randomized theory T^R is the common continuous theory of all randomizations of models of T. Randomizations are known to preserve model-theoretic properties, such as countable categoricity, stability (not simplicity), NIP, etc... In this talk, we will study how randomizations interacts nicely with ideas from *computable structure theory*. More precisely, we will discuss the question as to whether or not there is a connection between a (countable, discrete) structure $\mathcal{M}$ having a *computable presentation* and its *Borel randomization* $\mathcal{M}^{[0,1)}$ having a computable presentation, stating the following result:

Theorem: For any classical (discrete), countable structure $\mathcal{M}$, we have that $\mathcal{M}$ has a decidable presentation if and only if $\mathcal{M}^{[0,1)}$ has a computable presentation for which the constant functions are uniformly computable points.

Furthermore, if T is a continuous theory in a computable language, we say that T has **effective quantifier-elimination** if there is an algorithm such that, upon input a restricted formula $\varphi(\vec{x})$ and rational $\epsilon > 0$, returns a quantifier-free restricted formula $\psi(\vec{x})$ such that $\|\varphi - \psi\|_T < \epsilon$. We will discuss how every theory of randomizations admits effective quantifier elimination. This is a joint work with Isaac Goldbring presented in [2] and was partially supported by NSF grant DMS-2054477.

References.

[1] I. Ben Yaacov and H.J. Keisler, *Randomizations of models as metric structures*, ***Confluentes Mathematici***, vol. 1 (2009), no. 02, pp. 197–223.

[2] N. Cuervo Ovalle and I. Goldbring, *Computable presentations of randomizations*, ***arXiv preprint***, (2025).

[3] H.J. Keisler, *Randomizing a model*, ***Advances in Mathematics***, vol. 143 (1999), no. 1, pp. 124–158.