

## Poster Presentation

MS017.P04

### *Some combinatorial properties of random noble means words*

Eden Delight Miro<sup>1</sup>, Stein Alec Baluyot<sup>1</sup>, Job Nable<sup>1</sup>

<sup>1</sup>*Department Of Mathematics, Ateneo De Manila University, Quezon City, Philippines*  
E-mail: eprovido@ateneo.edu

Nonperiodic structures are the main tools used in modelling quasicrystals. In turn, it is known that these structures are well-modeled by Meyer sets, and that one way to derive Meyer sets is by considering the vertices of each tile of certain classes of aperiodic tilings as atomic positions. An example of such classes of aperiodic tilings can be produced by a mixture of primitive substitutions applied randomly at a local level. In 1989, one example was introduced by Godreche and Luck [1] called the the random Fibonacci substitution in their study of quasi-crystalline structures and tilings on the plane. In this work, we consider a generalization of random Fibonacci substitution called the random noble means (RNM) substitution. The RNM substitution was first studied in [2, 3]. We study some combinatorial properties of the random noble means hull. In particular, we investigate the right and/or left allowable extensions of the RNM words. The combinatorial properties of the RNM words are useful in the description or computation of the cohomology of RNM tilings spaces, which is the ultimate goal of this research program.

[1] Godreche, C. & Luck, J.M. (1989). *J. Stat. Physics*, 55, 1-28.

[2] Nilsson, J. (2012). *Monatsh. Math.*, 168, 563-577.

[3] Moll, M. (2013). A PhD Thesis, Bielefeld University.

**Keywords:** [Aperiodic Tilings](#); [Local Random Substitutions](#); [Random Noble Means Substitution](#)