

# Boğaziçi MATH COLLOQUIUM

## Arithmetically exceptional polynomial mappings

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**Abstract:** A polynomial with integer coefficients is called (arithmetically) exceptional if it induces a permutation over infinitely many residue fields. The classification of one-variable exceptional polynomials is finished; such a map is a composition of linear polynomials, monomials and Chebyshev polynomials. Lidl and Wells have generalized Chebyshev polynomials to several variables and shown that certain such maps are exceptional. One can show that their polynomials, with  $n$  variables, correspond to a family of maps associated with the simple complex Lie algebras  $A_n$ . In this talk, we will focus on the multivariate polynomial mappings that are associated with the other simple complex Lie algebras. We will give an easy to check condition for these multivariate maps to induce permutations over finite fields. Using this result, we will show that there exist infinitely many exceptional polynomials for each simple complex Lie algebra. ?

**Date :** Wednesday, March 27, 2019

**Time:** 13:30

**Place:** TB 130, Boğaziçi University