Seminar 2023 Math

Representations of Integers as Quotients of Sums of Distinct Powers of Three

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2023년 6월 28일(수) 14시-14시 50분 과학관 225호

Abstract: We will discuss the question of which integers can be written as quotients of sums of distinct powers of three. The motivation for this question includes a connection to the Cantor middle third set and Newman polynomials (polynomials with coefficients 0 and 1, and constant term 1). We introduce a necessary and almost sufficient condition for an integer to have such a representation, give an algorithm that generates representations for given integers meeting the condition, and present early results towards categorizing such representations. This is joint work with Katie Anders, Madeline Locus Dawsey, and Bruce Reznick.



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주최: 4단계 BK21 수리과학 및 계산교육 연구단

