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Title: Splitting subspaces and a finite field interpretation of the Touchard-Riordan Formula

Abstract: Given a linear operator T on a $2m$ -dimensional vector space, a subspace W of dimension m is said to be T -splitting if $W + TW$ is the full space. The Touchard-Riordan formula is a simple formula for computing the number of chord diagrams on a regular n -gon with a specified number of crossings. We will present a formula for the number of splitting subspaces for a general linear operator which specialized to the Touchard-Riordan formula for operators that are represented by diagonal matrices with distinct diagonal entries. This is based on joint work with Samrith Ram of IIT Delhi.