An Overview of the MDS Conjecture

Dongchun Han

Abstract. Maximum Distance Separable (MDS) codes form one of the most fundamental classes of error-correcting codes, attaining the Singleton bound with equality. Their structure is closely connected with classical objects in finite geometry, especially arcs in projective spaces. This talk gives an overview of the MDS Conjecture, which predicts the maximum possible length of a nontrivial MDS code over a finite field, apart from the known exceptional cases. We will review the background and geometric interpretation of the conjecture, summarize major known results and recent progress, and discuss some of the main techniques that have been developed, including algebraic, combinatorial, and geometric methods.

About the speaker. Dongchun Han earned his Ph.D. from the Center for Combinatorics at Nankai University in 2015. Currently serving as a Yanghua Young Distinguished Professor and doctoral supervisor at Southwest Jiaotong University, his academic honors include the university's Young Eagle Scholar award and recognition as a Young Top-notch Talent within the National Ten Thousand Talents Program. His research focuses on the intersection of combinatorics, number theory, and coding theory. Professor Han has published over 20 SCI-indexed papers in leading journals such as International Mathematics Research Notices, Journal of Combinatorial Theory, Series A, SIAM Journal on Discrete Mathematics, Journal of Number Theory, and IEEE Transactions on Information Theory.

School of Mathematics, Southwest Jiaotong University, Chengdu, 610031, China
E-mail: han-qingfeng@163.com · *Web*: https://faculty.swjtu.edu.cn/handongchun