Minimal 1-saturating sets and complete caps in binary projective geometries

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Abstract

In this work constructions of minimal 1-saturating sets and complete caps in binary projective spaces PG(ν,2) are described. They give infinite families of sets and caps in spaces with increasing dimension. Some constructions produce minimal 1-saturating sets of an interesting symmetrical structure connected with inner lines, polygons and orbits of stabilizer groups. As an example we note a minimal 1-saturating 11-set in PG(4,2) called “Pentagon with center”. The complete classification of minimal 1-saturating sets and complete caps in small geometries is obtained.