

Pretty pictures of geometries

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Abstract

We present four construction principles that allow us to produce many beautiful plane and spatial models of some of the most important small finite geometries.

1 Introduction

Did you ever ask yourself why there are only a handful of pictures that pop up in texts on incidence geometry? The pictures we have in mind here are the traditional pictures of the Fano plane, the affine plane of order 3, the Desargues and Pappus configurations etc. How many times have you drawn these pictures in your lectures and how many times have you drawn them to illustrate to somebody outside your field what the kinds of objects are we are dealing with in incidence geometry? Once you start asking these kinds of questions, you also immediately start wondering whether these are really the only pictures which are worth drawing and whether they are even the ‘best’ pictures of the geometries involved.

We are in the process of compiling a comprehensive collection of good plane and spatial pictures of small incidence geometries which, eventually, will appear in [7]. While working on this collection, we have come to the conclusion that there are many more amazing pictures and models of geometries that everybody interested in geometry should know about.

In this note we describe four of the most useful construction principles for constructing pictures of small incidence geometries which capture large parts of the

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