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A constructive approach to affine and projective planes

In classical geometric algebra we approach the affine and projective planes from an analytic and a synthetic point of view and we prove that these two points of view are equivalent. This classical approach is not entirely constructive and it is based on fields.

We will present a constructive version of the above based on local rings instead of fields. The constructions involved are related to the ones that appear in Anders Kock's paper *Universal Projective Geometry via Topos Theory* and Emil Artin's book *Geometric Algebra*. We will also present the geometric morphisms between the classifying toposes of the theories involved.