

Generalized Rings

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Abstract

Nikolai Durov's dissertation project was to set up a global geometry for schemes over the rational integers. To lay foundations, he developed a theory of generalized (commutative) rings. I will describe what he called the naïve description of generalized rings. What a generalized ring generalizes about a commutative ring is the “graded set” of n -ary linear forms with coefficients in the ring, $n = 0, 1, \dots$

My approach will be to look at such n -ary forms, to list the facts that are turned around into the axioms for generalized rings. Then I will give the sort of examples of generalized rings you might run into.

Finally, I'll list some unexpected properties of generalized rings.

Keywords: scheme, commutative ring, n -ary linear form.