

# Cubic forms and algebraic dissociative loops

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In the book *Cubic forms*, Yu. Manin noted that every cubic form  $S$  admits a structure of local algebraic diassociative loop, which does not contain an open set  $U$  such that multiplication is defined on  $U$ . Recall that a loop  $S$  is diassociative if every two elements  $a, b \in S$  are contained in some (local) subgroup of  $S$ . We will call such loops of the second type (the loops of the first type are those where such set exists). We will discuss the following Conjecture, formulated in our (non-finished, unfortunately) paper with Yu. Manin:

Conjecture. Let  $P$  be a local algebraic dissociative loop then  $P$  is a loop of the first type, or  $P$  contains a normal subloop  $N$  such that  $P/N$  is a cubic form.