

Notes on classification of sequents

Vladimir Voevodsky
Started April 22, 2006

April 22, 2006

Suppose that one is using a type system as the language underlying some proof assistant system. How does the accumulating work look like? Since units of the language are sequents and contexts this is what one gets i.e. there is an accumulation of contexts and (verified) sequents in these contexts. As one keeps working one is using the existing contexts and sequents to build new ones. If another person wants to continue the work he needs to be able to access the stuff which have been done. Hence this stuff must me in some kind of order - i.e. a classification of established sequents and contexts is necessary which would allow a convenient access.

So what useful from the access point of view structures exist on the set of contexts?

Examples of contexts:

1. Let U be a universe and G be a group in U
2. same + and x an element of the center of G
3. Let n be a natural number
4. Let U be a universe and X a finite set in U
5. Let x be a real number
6. Let U be a universe and C a small category in U
7. Let U be a universe and C a locally-small category in U
8. Let U be a universe and A be a σ -algebra in U
9. Let U be a universe, T a topological space (in U) and F a presheaf of sets (U -sets) on T

Examples of context instantiation:

1. The group of integers

2. 5
3. $\{x \in \mathbf{N} \mid x < 5\}$
4. π
5. the category of finite sets in U_2
6. the category of sets in U