

8 Postface	70
8.1 Misc	70
A Some counter-examples	70
A.1 Second product. Oblique product	75

1 Common

1.1 Earlier works

Some mathematicians researched generalizations of proximities and uniformities before me but they have failed to reach the right degree of generalization which is presented in this work allowing to represent properties of spaces with algebraic (or categorical) formulas.

Proximity structures were introduced by Smirnov in [5].

Some references to predecessors:

- In [6], [7], [12], [2], [19] are studied generalized uniformities and proximities.
- Proximities and uniformities are also studied in [10], [11], [18], [20], [21].
- [8] and [9] contains recent progress in quasi-uniform spaces. [9] has a very long list of related literature.

Some works ([17]) about proximity spaces consider relationships of proximities and compact topological spaces. In this work the attempt to define or research their generalization, compactness of functors or retracts, is not done. It seems potentially productive to attempt to borrow the definitions and procedures from the above mentioned works. I hope to do this study in a separate article.

[4] studies mappings between proximity structures. (In this work no attempt to research mappings between functors is done.) [13] researches relationships of quasi-uniform spaces and topological spaces. [1] studies how proximity structures can be treated as uniform structures and compactification regarding proximity and uniform spaces.

1.2 Used concepts, notation and statements

The set of functions from a set A to a set B is denoted as B^A .

I will often skip parentheses and write fx instead of $f(x)$ to denote the result of a function f acting on the argument x .

I will call **small** sets members of some Grothendieck universe. (Let us assume the axiom of existence of a Grothendieck universe.)

Let f is a small binary relation.

I will denote $\langle f \rangle X = \{f\alpha \mid \alpha \in X\}$ and $X [f] Y \Leftrightarrow \exists x \in X, y \in Y : x f y$ for small sets X, Y .