

# A constructive theory of uniformity

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## **Abstract**

We introduce the constructive notion of a uniformity (uniform structure) with the spirit of Sambin's notion of a basic pair, and show some natural properties of a uniform space, a setoid with a uniform structure. Then we construct a completion of a uniform space as a setoid of Cauchy nets, and define a complete uniform space. We show that a double completion of a uniform space is uniformly equivalent to the completion of the uniform space and the completion of a uniform space is complete, and that product of completions of two uniform spaces is uniformly equivalent to the completion of product of the uniform spaces and product of two complete uniform spaces is complete. If time allows, we see some applications.