

NON-WELL-WOUNDED FUZZY AND PROBABILITY LOGIC

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In the paper we propose a non-well-founded fuzziness. This means that fuzzy set is defined with denying the foundational axiom of set theory. For example, fuzzy class of subset is defined on streams, e.g. on p -adic numbers. Also, we propose non-well-founded probabilities as a kind of fuzzy ones. They are defined on the set of streams too. p -adic probabilities may be negative rational numbers as well as rational numbers that are larger than 1. Bayes' formula doesn't also hold in the general case for non-well-founded probabilities. Traditionally, physical reality is regarded in modern science as reality of stable repetitive phenomena (phenomena that do not fluctuate in the standard real metric). In p -adic probability theory there are statistical phenomena for that relative sequences of observed events stabilize in the p -adic metric, but fluctuate in the standard real metric. This means that some physical phenomena are probable in p -adic metric, but they are improbable in real metric. Further, we set non-well-founded fuzziness and non-well-founded probabilities within the framework of a special case of logic, whose syntax and semantics are defined by using coinduction.