

Meeting: 1004, Bowling Green, Kentucky, SS 8A, Special Session on Topology, Convergence, and Order, in Honor of Darrell Kent

1004-54-157 **Roman Fric*** (fric@saske.sk), Matematický ústav SAV, Gresakova 6, 040 01 Košice, Slovak Rep. *Extension of measures: a topological approach.*

We present a topological approach to the extension of probabilities, i.e. normed sigma-additive measures. J. Novak showed that each bounded sigma-additive measure on a ring of sets is sequentially continuous and pointed out the topological aspects of the extension of such measures to the generated sigma-ring: it is of a similar nature as the extension of bounded continuous functions on a completely regular topological space over its Čech-Stone compactification. He developed a theory of sequential envelopes and (exploiting the Measure Extension Theorem) he proved that the generated sigma-field is the sequential envelope of a field of sets with respect to the probabilities. However, the sequential continuity does not capture other properties (e.g. additivity) of measures. We show that the category ID of D-posets of fuzzy sets (such D-posets generalize both fields of sets and bold algebras) probabilities are morphisms and the extension of probabilities is a completely categorical construction (an epireflection). We mention applications to the foundations of probability and formulate some open problems. (Received January 23, 2005)