Fuzzy uniform structures

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It is well-known that, although not every uniformity is metrizable, every entourage of a uniformity belongs to a coarser uniformity generated by a certain pseudometric. This allows to identify a uniformity with a family of pseudometrics called a *gauge* or a *uniform structure*. In 2010, Gutiérrez García, S. Romaguera and M. Sanchis [1] proved that the above is also true when you consider fuzzy pseudometrics, i.e. every uniformity is, categorically speaking, equivalent to a family of fuzzy pseudometrics satisfying certain properties.

On the other hand, we can find essentially different notions of uniformity in fuzzy topology. In our talk we will show how probabilistic uniformities as well as Lowen uniformities are equivalent, categorically speaking, to certain families of fuzzy pseudometrics. This allows for clarifying the relationship between classical uniformities and these types of fuzzy uniformities.

[1] J. Gutiérrez-García, S. Romaguera, and M. Sanchis, *Fuzzy uniform structures and continuous t-norms*, Fuzzy Sets Syst. **161** (2010), no. 7, 1011-1021

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