Session G.4: **S-12 Theoretical Aspects - II**
Location: Eden Vale C3

53: Wiener's Conjecture About Transformation Groups Helps Predict Which Fuzzy Techniques Work Better
NAFIPS Peer Reviewed
Vladik Kreinovich*, University of Texas at El Paso; *Francisco Zapata,* University of Texas at El Paso; *Olga Kosheleva,*
University of Texas at El Paso
Often, application success only comes when we select specific fuzzy techniques (t-norm, membership function, etc.) – and in different applications, different techniques are the best. How to find the best technique? Exhaustive search of all techniques is not an option: there are too many of them. We need to come up with a narrow class of promising techniques, so that trying them all is realistic. In this paper, we show that such a narrowing can be obtained from transformation groups techniques motivated by N. Wiener's conjecture – which was, in its turn, motivated by observations about human vision.

54: Interval and Symmetry Approaches to Uncertainty – Pioneered by Wiener – Helps Explain Many Seemingly Irrational Human Behaviors
NAFIPS Peer Reviewed
Vladik Kreinovich*, University of Texas at El Paso; *Joe Lorkowski,* University of Texas at El Paso
It has been observed that in many cases, when we present a user with three selections of different price (and, correspondingly, different quality), then the user selects the middle selection. This empirical fact – known as a compromise effect – seems to contradicts common sense. Indeed, when a rational decision-maker selects one of the two alternatives, and then we add an additional option, then the user will either keep the previous selection or switch to a new option, but he/she will not select a previously rejected option. However, this is exactly what happens under the compromise effect. If we present the user with three options a < a′< a″, then, according to the compromise effect, the user will select the middle option a′, meaning that between a ′ and a ″, the user will select a ′. However, if instead we present the user with three options a′<a″<a‴, then, according to the same compromise effect, the use will select a previously rejected option a″. In this paper, we show that this seemingly irrational behavior actually makes sense: it can be explained by an application of a symmetry approach, an approach whose application to uncertainty was pioneered by N. Wiener (together with interval approach to uncertainty).

57: Uniformly Strongly Prime Fuzzy Ideals
NAFIPS Peer Reviewed
Flaulles Bergamaschi*, UESB; Regivan Santiago, UFRN
In this paper we define the concept of uniformly strongly prime fuzzy ideal for associative rings with unity. This concept is proposed without dependence of level cuts. We show a pure fuzzy demonstration that all uniformly strongly prime fuzzy ideals are a prime fuzzy ideal according to the newest definition given by Navarro, Cortadellas and Lobillo in 2012. Also, some properties about fuzzy strongly prime radical and their relations with Zadeh's extension are shown.

4.00pm **Break**

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