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Abstract Form

Author: Jimmy Devillet
Department: FSTC
University: University of Luxembourg
Address: Maison du Nombre
 6, Avenue de la Fonte
 L-4364 Esch-sur-Alzette

Co-author(s):

Title of talk: On bisymmetric and quasitrivial operations

Abstract:

Let X be a nonempty set. Recall that a binary operation $F: X^2 \rightarrow X$ is said to be *bisymmetric* if it satisfies the functional equation

$$F(F(x, y), F(u, v)) = F(F(x, u), F(y, v)), \quad x, y, u, v \in X.$$

Also, an operation $F: X^2 \rightarrow X$ is said to be *quasitrivial* if $F(x, y) \in \{x, y\}$ for all $x, y \in X$. We provide a full description of the class of bisymmetric and quasitrivial operations $F: X^2 \rightarrow X$. We also investigate and describe the subclass of those operations that are nondecreasing in each variable and we show how this description is related to the so-called single-plateaued weak orderings. In the case where X is finite, we put a particular emphasis on the graphical properties of these operations by looking into their contour plots.