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Austin C Melton* (amelton@kent.edu), Department of Mathematical Sciences, Kent State University, Kent, OH 44242. *Lattice-valued Galois Connections.*

A classical or crisp Galois connection is generated by a relation R between sets X and Y , i.e., $R \subseteq X \times Y$. In this setting, G. Birkhoff defined a Galois connection, originally called a pololarity, between the power sets of X and Y . The maps $f : \mathcal{P}(X) \rightarrow \mathcal{P}(Y)$ and $g : \mathcal{P}(Y) \rightarrow \mathcal{P}(X)$, which are used to form the Galois connection $(f, \mathcal{P}(X), \mathcal{P}(Y), g)$, are called Birkhoff operators.

Properties of Galois connections are reviewed, and then the relation R is generalized to a lattice-valued relation $R : X \times Y \rightarrow L$, where L is a complete lattice with additional structure. (For this talk, L will be a commutative, residuated semiquantale.) In this setting, the Birkhoff operators may be generalized to $H : L^X \rightarrow L^Y$ and $K : L^Y \rightarrow L^X$ to form the lattice-valued Galois connection (H, L^X, L^Y, K) where the partial orders on L^X and L^Y are point-wise. Classical Galois connection properties which generalize to the lattice-valued setting are discussed. (Received September 02, 2012)