# ON HOMOMORPHISMS OF EXTENDED-ORDER ALGEBRAS

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The talk will consider the concept of *(weak) extended-order algebra* (*w-eo algebra*) introduced by C. Guido [2] (in the wake of *implicative algebras* of H. Rasiowa [3]) as a triple $(L, \rightarrow, \top)$, where $L$ is a set, $\top$ is a fixed element of $L$ and $\rightarrow$ is a binary operation defined on $L$ satisfying the following conditions: (1) $a \rightarrow \top = \top$; (2) $a \rightarrow a = \top$; (3) if $a \rightarrow b = \top$ and $b \rightarrow a = \top$, then $a = b$; (4) if $a \rightarrow b = \top$ and $b \rightarrow c = \top$, then $a \rightarrow c = \top$ (in one word, letting $a \leqslant b$ iff $a \rightarrow b = \top$, gives a partial order on $L$). While H. Rasiowa was interested in providing a common framework for the algebraic structures used in non-classical logics, C. Guido was inspired by those of many-valued mathematics. In particular, he investigated thoroughly the possibility of obtaining all the standard logical connectives (conjunction, disjunction, negation, *etc.*) and their properties (associativity, commutativity, distributivity, *etc.*) from the single one $\rightarrow$ and its properties, using the technique of adjunctions (also known as Galois connections) for partially ordered sets [1]. The attention of C. Guido and his collaborators, however, was restricted entirely to w-eo algebras, leaving the case of their homomorphisms aside. It is the purpose of the current talk to fill in the gap and provide a detailed description of different kinds of w-eo algebra homomorphisms and their essential properties.

## Acknowledgements

## References

[1] G. Gierz, K. H. Hofmann, and etc., *Continuous Lattices and Domains*, Cambridge University Press, 2003.

[2] C. Guido and P. Toto, *Extended-order algebras*, J. Appl. Log. **6** (2008), no. 4, 609–626.

[3] H. Rasiowa, *An Algebraic Approach to Non-Classical Logics*, Studies in Logics and the Foundations of Mathematics, vol. 78, North-Holland, Amsterdam, 1974.

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