

# Mutually exclusive nuances of truth

Denisa Diaconescu

Mathematical Institute - University of Bern  
Faculty of Mathematics and Computer Science - University of Bucharest

Joint work with I. Leuştean.

Nuances of truth represent a robust paradigm in the framework of many-valued logics [1]. The idea of nuancing states that a many-valued object is uniquely determined by some Boolean objects, its nuances, and it is called the determination principle. However, a many-valued object cannot be recovered only from its Boolean nuances. This idea goes back to Gr. C. Moisil [4] and it is mathematically expressed by a categorical adjunction between Boolean algebras and Łukasiewicz-Moisil algebras. Moisil's determination principle cannot be extended for subalgebras: distinct Łukasiewicz-Moisil algebras can have the same Boolean algebra reduct.

In this talk we explore a more expressible notion of nuances, namely mutually exclusive nuances of truth (or disjoint nuances of truth, for short). This idea was started in [3] and continued in [2]. Mutually exclusive nuances of truth, apart from saving the determination principle for subalgebras, give a new perspective on how Stone-type duality can be obtained for Łukasiewicz-Moisil algebras starting from Stone spaces.

## References

- [1] V. Boicescu, A. Filipoiu, G. Georgescu, and S. Rudeanu. *Łukasiewicz-Moisil algebras*. North-Holland, 1991.
- [2] D. Diaconescu and I. Leuştean. Mutually exclusive nuances of truth. In preparation.
- [3] I. Leuştean. A determination principle for algebras of  $n$ -valued Łukasiewicz logic. *Journal of Algebra*, 320:3694–3719, 2008.
- [4] Gr. C. Moisil. Notes sur les logiques non-chrysippiennes. *Ann. Sci. Univ. Jassy*, 27:86–98, 1941.