

**Nina Gierasimczuk (University of Amsterdam)**  
***Truth-tracking and Belief Revision***

In this talk I will present a way to evaluate the truth-tracking properties of various belief-revision policies. I will use formal learning theory [4], and the semantic approach to knowledge and belief originating in dynamic epistemic logic [2, 3]. I will argue that truth-tracking can be analyzed in terms of identifiability in the limit, and that it relies on topological separability properties of belief states.

The results concern mostly the conditions for universality of a belief revision policy (i.e., a belief revision method being as powerful as full identification in the limit). This leads to identifying factors that influence the (non-)universality of a belief-revision policy: the prior conditions for belief revision (e.g., standard belief-revision models); type of incoming information (e.g., entirely truthful as opposed to partially erroneous); properties of belief-revision-based learning functions (e.g., conservatism). In this framework we can naturally treat the procedural aspect of iterated belief revision, address some intermediate stages of such iterations and relate them to the ultimate success of a belief-revision policy.

The results presented in this talk come from a joint work with Alexandru Baltag and Sonja Smets [1].

# Bibliography

- [1] Baltag, A., Gierasimczuk, N., and Smets, S. (2011). Belief revision as a truth-tracking process. In Apt, K., editor, *TARK'11: Proceedings of the 13th Conference on Theoretical Aspects of Rationality and Knowledge*, pages 187–190. ACM, New York, NY, USA.
- [2] Baltag, A., Moss, L. S., and Solecki, S. (1998). The logic of public announcements, common knowledge, and private suspicions In Gilboa, I., editor, *TARK'98: Proceedings of the 7th Conference on Theoretical Aspects of Rationality and Knowledge*, pages 43–56. Morgan Kaufmann Publishers Inc., San Francisco, CA, USA.
- [3] Van Benthem, J. (2007). Dynamic logic for belief revision. *Journal of Applied Non-Classical Logics*, 2:129–155.
- [4] Gold, E. M. (1967). Language identification in the limit. *Information and Control*, 10:447–474.