Stuff related to tensor products of modal algebras

Daniel Rogozin

1 Preliminaries

Definition 1. *A normal modal logic*

Definition 2. *A Kripke frame, a Kripke model, a general frame*

Definition 3. *A modal algebra/a complex algebra*

Definition 4. *the logic of a frame/class of frames.*

Definition 5. *product of frames/product of logics*

Definition 6. *discrete duality between perfect modal algebras and Kripke frames*

Definition 7. *A finitely axiomatisable normal modal logic*

TODO: descibe related underlying results

2 Tensor products of modal algebras. The basic definitions and results

Definition 8. *A commutative associative algebra*

Definition 9. *Tensor product of them*

Definition 10. *Tensor product of modal algebras*

Definition 11. *Tensor product of general frames*

TODO: descibe related underlying results

3 Note on incomplete modal logics

TODO: consider the system containing **GL**, McKinsey, seriality, and linearity.

4 Solution of Problem 1

5 Solution of Problem 4

References

[1] A. Chagrov, , and M. Zakharyaschev. *Modal Logic*. Oxford logic guides. Clarendon Press, 1997.

[2] Dov Gabbay, Ilya Shapirovsky, and Valentin Shehtman. Products of modal logics and tensor products of modal algebras. *Journal of Applied Logic*, 12(4):570–583, 2014.

[3] Dov M Gabbay and Valentin B Shehtman. Products of modal logics, part 1. *Logic journal of IGPL*, 6(1):73–146, 1998.

[4] Robert Goldblatt. Logics of time and computation. csli, 1987.

[5] Robert Goldblatt. Varieties of complex algebras. *Annals of pure and applied logic*, 44(3):173–242, 1989.

[6] Agi Kurucz. Combining modal logics. *Handbook of modal logic*, 3:869–924, 2007.

[7] Agi Kurucz, Frank Wolter, Michael Zakharyaschev, and Dov M Gabbay. *Many-dimensional modal logics: Theory and applications*. Elsevier, 2003.