

TOPICS IN ALGEBRAIC LOGIC AND DUALITY
THEORY
SEMINAR SHEET 4

- The contents of this seminar sheet will be discussed on **June 14**;
 - Pick one or more examples to work out in full detail; you do not need to work on all of the examples.
 - Examples are roughly ordered by conceptual difficulty, relative to the material covered in lectures.
- (1) (**Interpolation of seven superintuitionistic logics**) Show the easy direction of Maksimova's characterisation. That is, show that the logics CPC, LC₂, LC, KC, BD₂, BDW₂ and IPC have interpolation.
- (2) (**Logics of bounded depth or width**)
- (a) Show that a frame validates \mathbf{bd}_n iff it doesn't contain a chain of $n + 1$ points.
 - (b) Show that a frame validates \mathbf{bw}_n iff none of its rooted subframes contain an antichain of $n + 1$ points.
- (3) (**Axiomatization and semantics of seven superintuitionistic logics**) Show all the equalities on slide 2. Additionally, show that BD₂ is axiomatised by the Jankov formula of the 3-chain, KC is axiomatised by the Jankov formula of the 2-fork, and that LC is axiomatised by the Jankov formulas of the 2-fork and diamond.
- (4) (**Gaps in the slides**) Prove the exercises from the slides.