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Report on the doctoral dissertation of Olga Ivanovna Ulbrikht

After a long introduction to Jonsson Theories the author presents some new results:

1. A study of the lattice of existential formulae in a Jonsson theory.
2. Some applications to abelian groups: (i) a generalisation of Goodricks's result on Schroder-Bernstein property, using e.c. embeddings instead of elementary ones
   (ii) a characterisation, based on Szmielev invariants, of couples of abelian groups satisfying the same Jonsson Theories (up to cosemanticness).
3. A double attempt to define forking in a stable Jonsson theory. The first one follows the original approach of Shelah; in fact, this has already done by BenYaacov in the frame of Positive Logic with amalgamation; but Ben Yaacov presentation is very difficult to grasp, and it is certainly wishable to have a simpler and clearer definition of forking in the more restricted case of Jonsson Theories. In the present case, the reviewer doubts that the definition of dividing as defined by the author have interesting properties; in this context where the negation of an existential formula may be not equivalent to an existential formula, some condition of uniformity for the negative part of the definition should be included.
   The second attempt is based on the parisian approach, and is totally original. But the author seems to underestimate the difficulty of working in a context where a formula has no complement, and I think that her definition of the fundamental order, which is a plain copy of the definition working for the logic with negation, should be modified before becoming operational.

My conclusion is that, in spite of some shortcomings, the thesis should be defended, because the authors presents some new results, and explore a field of great interest, even if some of her definitions have not yet found their final form.

Leh (India), October 3rd, 2019

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