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Review of the Ph.D. Thesis of Tatyana Zambarnaya

Countable models of small dependent theories

submitted for the degree of a Doctor of Philosophy in specialty 6D060100 Mathematics

Ms. Zambarnaya's thesis consists primarily of four theorems concerning the number of countable models of countable dependent theories. The determination of the number of models of an arbitrary countable theory has been a major research topic for almost 60 years. These papers contribute to that program. I discuss the results by the number in the thesis bibliography of the paper in which they were published.

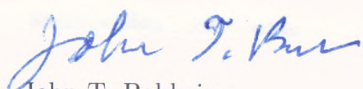
1. Paper [69] demonstrates that if a theory  $T$  admits a definable partial order with discrete linear segments of arbitrary finite length then  $T$  has  $2^{\aleph_0}$  countable models.
2. Paper [65] shows that if a countable complete expansion  $T$  of a theory of linear order has a 'definable quasi-successor' then  $T$  has  $2^{\aleph_0}$  countable models.
3. Paper [63] introduces the notion of an extremely trivial theory and proves that an extremely trivial expansion of a theory of linear order has  $2^{\aleph_0}$  countable models. This extends the seminal work of Mati Rubin [53] by replacing the restriction to unary expansions of linear order by the condition of extreme triviality. There is nice progression of results from paper 1) to 2) to 3).

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4. Paper 74 shows Vaught's conjecture for the class of weakly o-minimal theories of convexity rank 1. This provides the first step in a program to extend Mayer result for o-minimal theories to weakly o-minimal theories.

In my opinion, this thesis fulfils the requirements for a doctoral dissertation, so I recommend that Ms. Zambarnaya be awarded the degree of Doctor of Philosophy. I was pleased to work with Ms. Zambarnaya on paper 3 during her stay in Chicago but she had already obtained the basic result before our collaboration began.



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