



TO WHOM IT MAY CORNCERN

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Referee's opinion on a habilitation dissertation of dr. Benjamin Vejnar

The presented dissertation covers three broad subjects: continuum theory, topological dynamics, and descriptive set theory. It shows that the author, dr. Benjamin Vejnar has very broad interests and knowledge of different subjects in topology.

Let me comment some of the results published in the dissertation. In continuum theory part the authors investigate relationship between different notions of end points or end sets. The study is deep, they provide many important examples and implications.

While reading this part I have found an interesting situation. Theorem 4.5 of the first article in the list is false, but the authors did not make the mistake. It is a consequence of a false statement by R.H. Bing. Let me explain. Let X be a continuum that is one point union two buckethandle continua joined by their end points. Then X is both arc-like and circle-like that contains block points. It is also a counterexample to a statement by Bing, quoted in the proof, that every arc-like and circle-like continuum is indecomposable.

In the next article the authors prove that any Peano continuum has continuum many compactifications that are incomparable by continuous functions. The proof is complicated, it requires smart constructions and very nontrivial techniques.

In this part I like the most the article on compactifiable families of continua. Here the authors introduce and investigate a new notion. I hope the notion will be of interest to other topologists.

It generalizes some other notions, like the existence of a universal element in the class. The authors provide some basic theorems about the new notion as well as some interesting relations to other notions. It seems to me that the problem of possible equivalence to polishable spaces is important and interesting.

In the article about continuous group actions Dr. Vejnar, now as the only author, shows that every continuous action of a compact group on a uniquely arcwise connected continuum has a fixed point. This is an interesting result, because it shows a difference in for continuous action of a compact group and for the group of all continuous functions. It is known that there are uniquely arcwise connected continua that admit fixed point free maps.

The article "On minimal homeomorphisms of Peano continua" answers, by an example, a question by A. Artigue.

Concerning the series of articles on descriptive set theory, I cannot judge them, because I am not a specialist in the area, but looking at the journals where they are printed, it looks like they are the same, very high, quality as the articles in continuum theory and dynamical systems.

Summarizing, the presented dissertation shows broad interests of dr. Vejnar, interesting and deep results, ability to work both alone and with other mathematicians, nonstandard, fresh, points of view of several subjects, and great creativity. The several open problems stated in the dissertation seems very intriguing, leaving a possibility of further investigation. I strongly recommend granting him the habilitation in mathematics.

I have gone through the check of originality of the thesis and it is absolutely clear that the thesis represents an original work with minimum overlap with the existing literature.

Sincerely,



Włodzimierz J. Charatonik