

**REPORT ON THE MASTER THESIS “ON REPRESENTATIONS OF
CHEKANOV-ELIASHBERG ALGEBRAS” BY MARIÁN POPPR**

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In his thesis Marián Poppr studies one of the modern invariants of Legendrian submanifolds of a contact manifold called Legendrian contact homology. Legendrian contact homology is a part of the symplectic field theory framework defined by Eliashberg-Givental-Hofer. It is a homology of the so-called Chekanov-Eliashberg algebra which was first defined by Chekanov for Legendrian knots in the standard contact \mathbb{R}^3 and then later extended to high-dimensional Legendrians. Chekanov-Eliashberg algebra is a unital non-commutative differential graded algebra freely generated by a finite number of elements (Reeb chords). This in particular implies that when non-zero, Legendrian contact homology is almost always infinite dimensional, and hence it is difficult to distinguish two non-isomorphic algebras. One of the ways to extract useful information from Chekanov-Eliashberg algebra is to follow Chekanov’s method of linearization which requires existence of a representation of Chekanov-Eliashberg algebra.

In his thesis Marián Poppr classified irreducible graded 2-dimensional representations of the Chekanov-Eliashberg algebra of a certain Legendrian knot. It is important that the representations described by the author are graded and these are the first examples of high-dimensional graded irreducible representations in the literature. Such representations are useful, in particular, for the Fukaya-type invariants of Legendrian knots such as graded representation category.

Save for a few typos, the computations in the thesis appear to be correct and the thesis is reasonably well written.

Conclusion. On the basis of my personal opinion as well as his thesis - it is my clear conviction that we in Marián Poppr have a strong young researcher. He wrote an excellent Master thesis, which contains an example describing high-dimensional graded irreducible representations of a Chekanov-Eliashberg algebra that never appeared before. That part of the thesis could be published in a peer-reviewed journal. I recommend Poppr’s thesis to be considered for the defense with the highest possible grade.

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