Curriculum Vitae

Michal Hrbek

Date of birth: December 4, 1988, Prague, Czech Republic
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Research interests:

Homological algebra, commutative algebra, representation theory.

Professional experience

2017 - Postdoc, Institute of Mathematics, Czech Academy of Sciences
2012 - Teaching Assistant, Department of Algebra, Charles University
Practical classes taught: Algebra, Linear Algebra and Geometry, Number Theory and RSA, Representations of Finite-dimensional Algebras

Education

2013 - 2017 Ph.D., Faculty of Mathematics and Physics, Charles University
Thesis topic: Tilting theory of commutative rings; Advisor: Jan Trlifaj
2011 - 2013 MSc. (hons.), Faculty of Mathematics and Physics, Charles University
2008 - 2011 BSc., Faculty of Mathematics and Physics, Charles University

Awards

2022 The Czech Mathematical Society Prize for Young Researchers
2020 Otto Wichterle Award of the Czech Academy of Sciences
2013 Dean prize for best master thesis in Mathematics, Faculty of Mathematics and Physics, Charles University

Research visits

02/2015 Research programme IRTATCA CRM in Barcelona.
09/2015 Research visit at University of Verona, joint work with Lidia Angeleri Hugel.
01 - 08/2018 Research stay at University of Padova, joint work with Silvana Bazzoni.
10/2018 Research visit at University of Verona, joint work with Lidia Angeleri Hugel.
11/2018 Research visit at University of Stuttgart, joint work with Frederik Marks.
12/2018 Research visit at University of Padova, joint work with Silvana Bazzoni.

Community service

Reviewed for journals including International Mathematical Research Notices, Transactions of the American Mathematical Society, Mathematische Zeitschrift, and others.
Associate editor in Kyungpook Mathematical Journal.

Project participation

- **01/2020 -** Project no. 20-13778S, Symmetries, dualities and approximations in derived algebraic geometry and representation theory, Czech Science Foundation, role: team member.
- **01/2018 - 12/2018** Project no. MSM1001918011, Structure and localizations of the derived category of a commutative ring, Czech Academy of Sciences Programme for research and mobility support of starting researchers, role: main investigator.
- **01/2017 - 07/2017** Project no. 17-23112S: Structural representation theory of algebras (localization and tilting theory), Czech Science Foundation, role: team member.
- **01/2014 - 12/2016** Project no. 14-15479S: Representation theory (structural decompositions and their constraints), Czech Science Foundation, role: team member.

Publications

1. M. HRBEK, P. RŮŽIČKA, Weakly based modules over Dedekind domains. Journal of Algebra 399 (2014): 251-268.
2. M. HRBEK, P. RŮŽIČKA, Characterization of Abelian groups with a minimal generating set. Quaestiones Mathematicae 38.1 (2015): 103-120.
3. M. HRBEK, One-tilting classes and modules over commutative rings. Journal of Algebra 462 (2016): 1-22.
4. L. ANGELERI HÜGEL, M. HRBEK, Silting modules over commutative rings. International Mathematics Research Notices (2016): rnw147, DOI: 10.1093/imrn/rnw147.
5. D. HERDEN, M. HRBEK, P. RŮŽIČKA, On the existence of weak bases for vector spaces. Linear Algebra and its Applications 501 (2016): 98-111.
6. M. HRBEK, P. RŮŽIČKA, Regularly weakly based modules over right perfect rings and Dedekind domains. Czechoslovak Mathematical Journal 67 (2017): 367-377.
7. M. HRBEK, Divisibility classes are seldom closed under flat covers. Journal of Pure and Applied Algebra 223.3 (2019): 1258-1271.
8. M. HRBEK, J. ŠŤOVÍČEK, Tilting classes over commutative rings. Forum Mathematicum 32.1 (2020): 235-267.
9. M. HRBEK, Compactly generated t-structures in the derived category of a commutative ring. Mathematische Zeitschrift 295.1 (2020): 47-72.
10. M. HRBEK, J. ŠŤOVÍČEK, J. TRLIFAJ, Zariski locality of quasi-coherent sheaves associated with tilting. Indiana University Mathematics Journal 69.5 (2020): 1733-1762.
11. S. BAZZONI, M. HRBEK, Definable coaisles over rings of weak global dimension at most one. Publicacions Matemàtiques. 65.1 (2021). 165-241.
12. M. HRBEK, T. NAKAMURA, Telescope conjecture for homotopically smashing t-structures over commutative noetherian rings. Journal of Pure and Applied Algebra 225.4 (2021): 106571.
13. L. ANGELERI HÜGEL, M. HRBEK, Parametrizing torsion pairs in derived categories. Representation Theory 25 (2021): 679-731.
14. M. HRBEK, L. POSITSELSKI, A. SLÁVIK, Countably generated flat modules are quite flat. J. Commut. Algebra 14.1 (2022): 37-54.

Preprints

1. M. HRBEK, J. HU, R. ZHU, Gluing compactly generated t-structures over stalks of affine schemes. arXiv preprint arXiv:2101.09966 (2021). To appear in Israel J. Math.

2. M. HRBEK, S. PAVON, Singular equivalences to locally coherent hearts of commutative noetherian rings. arXiv preprint arXiv:2109.13853 (2021).

3. S. BREAZ, M. HRBEK, G. C. MODOI, Silting, cosilting, and extensions of commutative ring. arXiv preprint arXiv:2204.01374 (2022).

4. M. HRBEK, Topological endomorphism rings of tilting complexes. arXiv preprint arXiv:2205.11105 (2022).

5. M. HRBEK, T. NAKAMURA, J. ŠŤOVÍČEK, Tilting complexes and codimension functions over commutative noetherian rings. arXiv preprint arXiv:2207.01309 (2022).

Students

- Tomáš Lysoněk, Master's Thesis, *Local properties of modules*, defended 2022.

A selection of given talks

06/2012 *Modules with a minimal generating set*, AAA84, TU Dresden, Germany.
06/2014 *Some notes on Saorín's problem*, ASTA 2014, Spineto, Italy.
07/2015 *One dimensional tilting modules and classes over commutative rings*, Homological algebra in Kentucky, Lexington, USA.
05/2016 *Silting Modules over Commutative Rings*, Maurice Auslander Distinguished Lectures and International Conference, Woods Hole, USA.
08/2016 *n-tilting classes over commutative rings*, ICRA 2016, Syracuse, USA.
07/2018 Compactly generated t-structures over commutative rings, International Conference on Algebra and related topics, Rabat, Morocco.
08/2018 *On t-structures in the derived category of a commutative ring*, International Conference on Representations of Algebras 2018, Praha.
08/2019 *Homotopically smashing t-structures over commutative noetherian rings* (invited), Two weeks of silting. Stuttgart, Germany.
10/2021 *Derived equivalences induced by codimension functions on Spec(R)* (invited), Homological Methods in Representation Theory, Chiemsee, Germany.