

UNIVERSITY *of* MISSOURI

DEPARTMENT OF MATHEMATICS

COLLEGE OF ARTS & SCIENCE

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REPORT

on the Habilitation Dissertation of Dr. Petr Honzik

I am writing this report to evaluate the scientific quality of the Habilitation Dissertation of Dr. Petr Honzik for the Faculty of Mathematics and Physics at Charles University.

Dr. Honzik's area of expertise is Harmonic Analysis on Euclidean spaces, in particular, multi-dimensional singular integral operators (SIO). His Habilitation Thesis focuses on the theory of Calderon-Zygmund operators with kernels that lack smoothness (the so-called rough kernels), both in the linear and bi-linear settings, as well as commutators and Fourier multiplier operators.

Dr. Honzik's thesis is largely based on his seven published papers in refereed journals, including major publications in such prestigious journals as *Advances in Mathematics*, *Journal für die reine und angewandte Mathematik*, *The International Mathematics Research Notices* (two papers), *Journal of Geometric Analysis*, etc. His total list of publications in MathSciNet (American Mathematical Society) is comprised of 28 published papers.

I would like to single out a series of recent publications on rough maximal singular integral operators, by Honzik [E], and also his joint papers with Grafakos and He [F], and Buriánková [G]. They deal with hard, complicated problems, and the main results are mostly sharp, or best possible in a sense. In many instances, they are concerned with the delicate end-point estimates. In the linear case, and especially in the bi-linear setting, novel methods developed by Honzik rely upon wavelet-type decompositions of multiplier symbols. These techniques are highly sophisticated and efficient, and have already had a considerable impact in the area.



In his thesis, Dr. Honzik has presented some remarkable examples which answer several open questions on the basic behavior of SIO in Lebesgue spaces. For instance, in his paper [C], there is a valuable example of a bounded SIO such that its maximal counterpart is unbounded. Another interesting example in [B] due to Honzik shows that there exists a singular integral operator bounded in L^p spaces, for all $p > 1$, which is not of weak $(1,1)$ type.

I have examined the plagiarism check by the Turnitin system. Clearly, the percentage of the coincidence is satisfactory, and is due to the fact that Dr. Honzik's thesis is comprised of reprints of his selected published papers.

In my opinion, Dr. Honzik's Habilitation Dissertation is of very high quality. He has a well-developed, active research program in a dynamic area of modern analysis, with an extensive network of associates and co-authors in Europe and the US. His published works appeared in top-ranked mathematics journals. He stands out as a well-established researcher of serious accomplishments and great potential.

Sincerely,

A solid black rectangular box used to redact the signature of the author.

Igor Verbitsky,

Curators' Distinguished
Professor of Mathematics