To the Admission Committee to the
Master of Science in Mathematics and
Computer Science

March 20, 2022

Letter in support of Maxim Sergeevich Bobrin

I am glad to write a letter in support of Maxim Sergeevich Bobrin.

My knowledge of the candidate: I have been in contact with M.S.Bobrin at the Faculty of Mathematics of Higher School of Economics, as I have been his advisor for a couple of year-long term papers. We have been working on stability of stochastic gradient flows (last year) and some theoretical problems related to backward-forward dynamics for generative modeling (this year). I have been in constant contact with him in the last twenty months, even if some meetings were held online.

Scientific evaluation: Last year, M.S.Bobrin has worked under my supervision on a variational characterization of gradient stochastic dynamics. The result was used to prove stability of this class of dynamics under perturbations (errors). The subject required a large amount of preparatory work, mostly to properly define gradient evolutions in generic spaces and to study variational and geometric properties of some functionals on spaces of probability measures. Nevertheless, M.S.Bobrin went through all the material, before approaching some new original results. His work has been awarded in a rather competitive contest for students' work in Probability Theory in Russia. I would like to stress that there was a very high profile committee for the competition, and no support letters were allowed, so the prize was awarded solely on the text and mostly exposition from the candidate.

This year M.S.Bobrin is working on some variations of arXiv:2011.13456, about gen-

erative modeling. The idea is to generalize the approach to a wider class of backward-forward dynamics. Again, M.S.Bobrin showed a great interest and enthusiasm toward the daily growing literature on the subject, and is carrying out a large amount of work to translate the ideas in a more mathematical framework.

All in all, M.S.Bobrin is a student working constantly on his projects, with very good results and high motivations. It is a real pleasure to discuss and work with him.

Personal outlook: M.S.Bobrin is a serious and competent students, who has got along well with students and professors at the Faculty. He has constantly been working, and always being reactive and quickly taking on new issues. This is a rare feature in a time were more and more young students get somehow lost or unresponsive (at least at some degree) during their education.

Recommendation: I am confident that Maxim Sergeevich Bobrin has the motivation and background to successfully undertake the Master at Skoltech.

Feel free to contact me at `mmariani@hse.ru` and `mariani.mau@gmail.com` for any question.

Yours sincerely

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