July 16, 2019

To the Hiring Committee:

My name is Fosco LOREGIAN. I was awarded my Ph.D. from SISSA (Trieste, Italy) in June 2016.

I spent a few months as a postdoc at the University of Western Ontario (London ON, Canada), where I conducted researc in the group of proff. R. Jardine and D. Christensen; there, I covered a chair of basic Mathematics (combinatorics, and elements of probability theory) for undergraduates; I moved to Masaryk University (Brno, CZ) shortly after, working in the group of prof. Jiří Rosický on problems related to accessible categories, homotopy theory and 2-categories with one of his Ph.D. students; I actively engaged in teaching during the category theory and algebra course; subsequently, I took a short research position at Bonn's Max Planck Institute for Mathematics. I am now a postdoc in Coimbra Center for Mathematics.

Until now, my research revisited some aspects of the theory of triangulated categories and stable homotopy from the perspective of higher-dimensional category theory and formal category theory; I worked under the supervision of prof. Domenico Fiorenza (Rome, IT), and focused on the theory of factorization systems on $(\infty, 1)$-categories. I am interested in the foundations of homotopy theory, (higher and lower dimensional) category theory, categorical logic, algebraic topology, and its applications.

I have recently moved to a purely 2-categorical point of view on stable homotopy theory, extensively studying *Grothendieck derivators*; this led me to a deeper understanding of the 2-category they form and developed an already deep interest in formal category theory and 2-dimensional algebra; this is testified by a shift of my publication track towards purely 2-categorical problems.

With the passing of time I have cultivated a parallel growing interest in the field of computer science. I am an essentially self-taught programmer, I am eagerly learning the fundamentals of Haskell from Allen-Moronuki's "Haskell programming from first principles". Functional programming has notoriously a rather steep learning curve, but my extensive expertise in category theory is making the process very fun and smooth (parsers are monads, and what else they could be? Unit testing shall of course be able to test universally quantified properties of a chunk of code). I have already had the opportunity to work with many people on the frontier between category theory and computer science. Pure mathematics taught me to strive for rigor, definiteness and simplicity; among mathematicians, category theory is well-known for its care for efficiency (you want to prove a single theorem once and for all). It is evident how strongly this paradigm resonates with the leading ideas in FP's philosophy.

The present cover letter accompanies an extended *curriculum vitae*, a research statement, and three contacts to provide the needed reference letters:

- Domenico FIORENZA (fiorenza@mat.uniroma1.it - Università di Roma "La Sapienza"), my PhD advisor.
- Jiří ROSICKÝ (rosicky@math.muni.cz - Masaryk University).

- Emily RIEHL (eriehl@math.jhu.edu) John Hopkins University, Maryland USA.

I remain at your disposal for any further communication or clarification.

Thank you in advance for your consideration.

Best regards,

Fosco LOREGIAN
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