Albert-Ludwigs-Universität Freiburg

Deep Springs College September 22, 2025

Dear Committee,

I am writing to apply for the position as Herbert Reich Chair of Natural Science at Deep Springs College. My academic training is in mathematics. Since November 2020 I have been at the University of Freiburg, and before that I was a postdoc at the University of Vienna. I completed my PhD in mathematics at the University of Illinois at Chicago in 2017.

I know about Deep Springs, and about this position, from my friend Toby Altman (DS '06). It was Toby who first told me about the mission of Deep Springs and its pillars of labor, self-governance, and academics. I find this format for an institution of learning to be especially compelling given the times, when the university and its project are under duress and new ideas are needed.

When I have had the chance, I have sought non-traditional varieties of academic engagement. This includes attending a science communication expo as a PhD student, attending the University of Chicago's "Seminar on Important Things" on the history and philosophy of science, making annual appearances in a friend's Theory of Knowledge class at his International Baccalaureate school, and, most recently, giving a workshop on connections between poetry and higher math at Michigan State University.

I have substantial experience in mathematics education, both in terms of subject matter and classroom settings. At the University of Illinois at Chicago, I was a teaching assistant and lecturer for a wide variety of classes. At the University of Freiburg, I am teaching master's-level courses in mathematical logic. I have received very positive evaluations for my teaching in Freiburg. One of the participants of the first course I taught in Freiburg is the coauthor of my first preprint from last year. I currently have a master's student and a bachelor's student, both of whom had been students in my courses. More details can be found in my teaching statement. I believe that my skills in this domain are transferrable to education in the natural sciences, broadly construed.

Let me say a bit more about my academic research. My research focuses on a subfield of mathematical logic called set theory, which focuses on the properties of different infinite numbers, and the ways in which our basic assumptions about mathematical objects can be adjusted in order to consider different outcomes to a variety of questions. A detailed description of my efforts is enclosed in my research statement, which is mostly intended for a mathematical audience. (Since I did not know about this position before last week, the research statement is the version from the beginning of this year.) I thought it was a good idea to leave the statement as is for the sake of this application in order to provide a sufficiently vivid picture into my normal academic practice.

I have some tentative ideas about what sort of courses I could teach at Deep Springs that would be relevant to its academic mission. The first has to do with what is known as social choice theory, which deals with collective decision-making. There is a result called the Arrow Impossibility Theorem

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which states that—up to some assumptions—no perfectly fair democratic voting system exists. The precise interpretation of this theorem is subject to debate, and it would be interesting to have a seminar on the subject. During the coming semester in Freiburg, I will teach a course on the connections between mathematical logic and machine learning, which in part considers the limitations of artificial intelligence. I believe it would be possible to teach a version of this course that does not require mathematical specialization. It also appears that there is some literature on applications of so-called "fuzzy logic" to agriculture, but I would need to read further.

I look forward to hearing from the committee!

Regards,

Maxwell Levine

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