

MICHIGAN STATE UNIVERSITY

December 8, 2003

Biocomplexity Faculty Search Committee
c/o Prof. Robert de Ruyter van Steveninck
Biocomplexity Institute
Indiana University
Swain Hall West 117
Bloomington, IN 47405-7105

Dear Chair of the Search Committee:

I am writing this letter on behalf of Dr. **Tatyana Sharpee**. Tatyana was my Ph. D. student at Michigan State University. In 2001 she received her degree in theoretical condensed matter physics.

Tatyana was an outstanding student. She is one of the two best students that I have had. Tatyana was undoubtedly the best of condensed-matter graduate students at MSU in years. I can compare her to Ph. D. students in the small and highly selective condensed matter theory group at Stanford University, where I taught in 1992-1994. Tatyana took at MSU the same advanced class that I taught at Stanford, and I would put her in the top quarter of the Stanford class. Most of the students of this class are now faculty members in different universities, including Harvard.

Tatyana is very bright and very committed to science. She is focussed on research, science is her major interest in life. She works hard and creatively, and would not stop until the work is done. She has demonstrated the ability to find original solutions of hard theoretical problems. An example is the problem of tunneling in a magnetic field in a three-dimensional potential, which remained unsolved for decades in spite of numerous efforts of physicists and mathematicians. Tatyana made a crucial contribution to the solution of this problem. She then solved the problem of tunneling in a magnetic field in a system with strong electron correlations. In doing this she learned, used, and extended sophisticated mathematical methods.

Tatyana looks deep into the phenomena that she investigates. It allowed her to predict several qualitatively new effects, like magnetic field induced switching between tunneling and activation. It also allowed her to explain, qualitatively and quantitatively, the experimental observations on many-electron tunnelling that remained unexplained for several years. The results of her research were published in prestigious physical journals and presented at national and international conferences.

Tatyana's scientific curiosity and desire to learn are truly remarkable. She would keep working on a topic until she fully understands all qualitative and quantitative



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aspects of it. She has now switched to an area, which is quite far from the topic of her Ph. D thesis, the problem of feature selectivity of neurons. This is a fascinating problem. I truly admire her ability to switch and the breadth of her interests.

In view of the importance of her results and the fact that people in various areas know her work, I expect that she will have no problems with getting support from federal funding agencies.

I expect that Tatyana is a good teacher. I have heard several her talks at group meetings as well as departmental seminars and national conferences. The talks were very clearly presented. Her answers to questions were clear and specific. I have also watched her explaining complicated problems to other students, which was done in the most efficient way.

Tatyana has a wonderful personality. She is always prepared to help, is open and broadly educated. It is truly enjoyable to work with her. The combination of talent, motivation, commitment to science, and expertise make her a true asset as a colleague. I **very strongly recommend** Tatyana Sharpee for the faculty position.

Yours sincerely,

A handwritten signature in black ink that reads "M. Dykman". The signature is written in a cursive, slightly slanted style.

Mark Dykman