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October 16, 2003

Faculty Search Committee  
Department of Physics  
Indiana University  
Swain Hall West 117  
Bloomington, IN 47405-7105

Dear Sir or Madam:

I am delighted to recommend with enthusiasm Dr. Dmitriy Melnikov for a faculty position in physics at Indiana University. Dmitriy completed his Ph.D. in physics at Lehigh University in 2001 under my direction and has carried out postdoctoral research at the University of Minnesota and at the University of Illinois – Urbana-Champaign, his current position.

Dmitriy was among the most outstanding Ph.D. candidates who worked with me in my 35 years at Lehigh. First, he was an outstanding student. Among the courses that he took at Lehigh, two were with me; the first was a special topics course in density functional theory that Kamil Klier of the Chemistry Department and I team-taught, and the second was a graduate physics course in solid state theory. Dmitriy received an A in both courses, doing an excellent job in both. His abilities were also recognized by other faculty members, as he was supported in his research by a Sherman Fairchild Fellowship and was the recipient of the F. J. Feigl Memorial Award in the physics department.

In his Ph.D. research Dmitriy showed great capabilities. He worked on the theoretical topic of bound polarons in quantum dots. In the process of this research, he impressed me considerably. First, he is an extremely good mathematical physicist. In this respect he is well beyond me! Second, he is a "scholar" in the true sense of the word; because aspects of his topic had been treated by others, there is literature going back more than three decades, and Dmitriy dug this out, working through and understanding it, finding helpful approaches as well as errors. Third, he showed great skill in translating analytical results into numerical answers, utilizing a variety of techniques and constructing his own computer codes to do so. Fourth, he understood the physics of his results.

Because of Dmitriy's skill, scientific maturity, and impressive work ethic, this research progressed rapidly. The potential significance of this work is borne out by the fact that three Phys. Rev. B papers resulted from it. Dmitriy's desire to continue in condensed-matter theory, branching out into other problems, led him to take the initiative to connect with Jim Chelikowsky at

Minnesota (he had followed his wife, also a physicist, there where she had a postdoctoral appointment), and I was quite impressed with his work there in very different, computer-intensive quantum-dot problems in semiconductors. His work at UIUC represents yet another type of investigation on quantum dots, with potential applications to quantum computing. Indeed, with Dmitriy's abilities I do not hesitate to recommend him for areas of research that are quite different from those that he has been involved with. He has demonstrated great capacity in solving both formal and computational condensed-matter problems.

Like most of our graduate students, Dmitriy taught laboratory courses in introductory physics. As his research progressed, he gave many informal and formal presentations, all of which were well organized and clear. It was a pleasure to work with Dmitriy one-on-one; he and I got along very well. I expect that he will become a very good teacher.

With his abilities and experience, Dmitriy Melnikov is on a trajectory that will make him an outstanding scientist and a valuable and productive faculty colleague. I strongly recommend him for your position.

Sincerely yours,

A handwritten signature in black ink, appearing to read "W. Beall Fowler". The signature is fluid and cursive, with the first name "W." and last name "Fowler" clearly distinguishable.

W. Beall Fowler  
Professor of Physics Emeritus