

January 17, 2004

Biocomplexity Faculty Search Committee C/o Professor Rob de Ruyter van Steveninck
Biocomplexity Institute, Indiana University Swain Hall West 117
Bloomington, IN 47405-7105

Crystal Cooper has asked me to write in support of her application for a position at your institution. I supervised work she did for a Ph.D. thesis in Physics at The American University (TAU) in Washington, D.C. At that time, I was an assistant professor in Biology at TAU.

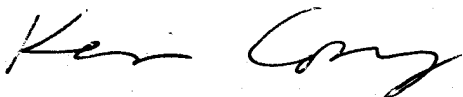
Crystal came to TAU from Howard University, where she had completed a number of hours of graduate course work in physics. At Howard she had become interested in biological applications of physics, notably in an independent study project modeling the behavior of red blood cells in electric fields. My own Ph.D. was earned in the Department of Biophysics at Johns Hopkins University. By the time I met Crystal I had previously published work using simulations of reaction-diffusion equations to model pattern formation in the vertebrate retina.

The physics department sent her to talk to me when they realized that she was interested in biological applications of physics, and she expressed a strong interest in my mathematical modelling work. I immediately put her to work on the next phase of my simulation work, and she subsequently turned this into a nice thesis. On the biology side, she found a way to model a long standing paradoxical result in the early development of visual patterns in frogs. Then, she took these same equations and worked with professors in physics and math to show that they exhibited many characteristic features of chaotic systems.

Crystal has since broadened and deepened her research competence via postdoctoral and research positions at Buffalo and Maryland. She has always been determined to function effectively as a researcher and teacher at the level of a university professor. Her basic or "natural" intellectual "tool kit" is the classical methods of mathematical physics, which she applies to areas such as non-linear dynamics, pattern formation, biophysical phenomena, and electrodynamics.

I have always been impressed by Crystal's willingness to try new techniques, apply them to new areas, locate new collaborators, think new thoughts, and adopt new approaches. She tends to succeed while you're not looking. She gets lucky, scientifically. She likes straightforward implementations and intellectually economical solutions, and she's not afraid to take a roundabout path to get there. She respects institutional traditions and the historical trajectory of physics, but she makes her own observations, takes her own counsel, and plots her own intellectual course. These characteristics have supported her past successes and indicate more good things to come. I hope you will give her a good hard look with respect to filling your position.

Sincerely,



Kevin Conway, Ph.D.
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