

To UNIVERSITY OF NOTRE DAME

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Faculty Search Committee
C/o Prof. James Glazier
Dept. of Physics
Indiana University
Swain Hall West 117
Bloomington IN, 47405-7105

Dear Professor Glazier:

I can say without any exaggeration that the field of complex networks is currently the most active area of statistical mechanics, and its results are followed widely, impacting or computer science, biology, sociology and economics. The field exploded around 1999, and without question *Dr. Jose F. F. Mendes* from Porto was one of the founding members of this area.

Mendes and his collaborators have started their work by looking at small world networks, an early proposal regarding the structure of complex networks. Yet, they were one of the first to recognize that the small world model does not offer a good approximation to real networks, and within months of the publication of the scale-free model they have published their first paper, inspecting the mathematical structure of the model. Subsequently, through a string of now classic papers he became the leader of the most active group in this area and Mendes's papers are deep, mathematically engaging (they set the standard for the mathematical study of complex networks), and innovative. In the last two years I often find my own group outdone by him.

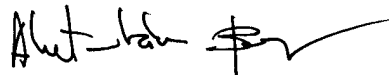
A good example is our study of hierarchy in scale-free networks. For over a year we have been trying to develop the correct approach to look at the effects of clustering in complex networks. We proposed a nice modeling framework, but we could not find a quantitative measure that could distinguish hierarchical models from the scale-free model. A few month after publishing the model, however, Mendes and collaborators have noticed that for the hierarchical model the clustering coefficient scales with the node's degree, and observation that has proven to be the key element of our further work in this area. Our latest paper, published recently by Science, rests on this observation, and without their discovery it would have not been possible.

In addition to his pioneering work, Mendes has played a key role in summarizing the results of the rapidly evolving field. Their already widely read and cited review article was published a few months ago in the prestigious *Advances in Physics*, and I know that they have just finished a book, which will be published latest next year by Oxford University Press. I am looking forward to reading this book. Mendes's energy and commitment for explaining the field's results is a huge gift to the community.

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In summary, Mendes has an outstanding international reputation as the founding member and the continuous leader of the field of complex networks. His leading role is partly demonstrated by his widely cited work and by the fact that he is invited speaker at all network conferences, which are quite numerous these days. He is an excellent and organized speaker, offering a disciplined and mathematically deep alternative to the other speakers (like myself) who are more qualitative in their work and presentations. Considering his reputation, I would have no doubt that should he choose to move away from Portugal, he would be offered a tenured professorships at several major US universities, that are currently trying to fill in positions in the area of complex systems. Any department should be proud to have him. Personally, I credit him for recognizing the importance of complex networks, and playing a key role in jumpstarting the activity in his area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Albert-László Barabási', with a long horizontal flourish extending to the right.

Albert-László Barabási
Emil T. Hofman Professor