



Universidade de Aveiro
Departamento de Física
Campus Universitário de Santiago
3810-193 Aveiro
Portugal

Ricardo Assis Guimarães Dias
Assistant Professor

Telephone: +351 234 378 115
Fax: +351 234 424 965
E-mail: rdias@fis.ua.pt

Fundação para a Ciência e a Tecnologia
Ministério da Ciência, Tecnologia e Ensino Superior

Aveiro, 9th June 2010

PhD applicant: Alexandre Lopes

Dear Sir

I am writing on behalf of Alexandre Lopes who is applying for a PhD grant.

I have known Alexandre for several years in my capacity of Assistant Professor at the Physics Department of the University of Aveiro.

In the final year of his undergraduate studies, I advised Alexandre on his course project. For his project, Alexandre selected the topic *Aharonov-Bohm effect and persistent currents in quantum rings*. This topic allowed Alexander to display his excellent analytical and computational skills. In fact, Alexandre is the most complete student I have ever had the opportunity to work with. But his most important quality (which will assure him a successful career in science) is his strong motivation to learn and to research. During the period of his course project, several times I was pleasantly surprised to find that Alexandre had independently explored alternative paths to find the solution of a problem, generalized results obtained for a specific problem or found a relevant reference to his work.

Alexandre is presently attending the Master studies in Physics of the University of Aveiro. Alexandre was my student in two courses of the Master studies: *Advanced Topics of Physics* and *Quantum Technologies*. In these courses, he has obtained the highest grades of the class. I am also the advisor of his Master's thesis, which will be completed this July. Again, I am observing his capacity to integrate knowledge and his broad grasp of physics which quite uncommon for a master student.

I have also attended several oral presentations by Alexandre as his teacher or advisor. Alexandre has a great ability to express and articulate scientific ideas in a clear way. He has also a friendly personality.

To conclude, I consider Alexandre to be one of the top student of our Physics department and I would very strongly recommend Alexandre for a PhD grant.

Yours sincerely,

Ricardo Assis Guimarães Dias

(Assistant Professor)