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## PROPOSAL FOR FEDERAL UNIVERSITY OF GOIÁS (INSTITUTE OF PHYSICS) TO JOIN THE MINOS COLLABORATION

Ricardo Avelino Gomes  
March 21, 2009

Dear Institutional Board Members,

I would like to formally request membership for Federal University of Goiás (UFG) as a Small Institution, under section 6 of the MINOS by-laws.

The Federal University of Goiás (<http://www.ufg.br>) is one of the most important universities of Brazil with about 16 000 undergraduate students, located at Goiânia, the state's capital of Goiás (about 2.5 hour drive from Brasília, the capital of Brazil). The Institute of Physics (<http://www.if.ufg.br>) consists of 39 professors, including myself. About 300 undergraduate students are enrolled in the physics program (Bachelor's and Teaching degrees) and about 40 graduate students in the Master and Doctoral Program in Physics. The institute facility includes many undergraduate laboratories (General Physics, Modern Physics, Electronics, Optics), research laboratories (Cristallography, Materials and Magnetism) and a Linux computing cluster containing about 100 machines. Most of the research done at this institute is related to condensed-matter physics and I am creating a High Energy Physics Group.

This proposal also requests my admission as the only MINOS senior member at UFG, although I hope to have contributions from my colleagues, students and in particular from Prof. Carlos O. Escobar (UNICAMP) and Prof. Philippe Gouffon (USP) – both members of MINOS Collaboration. Teaching demands about 16 hours per week of my time and the rest of it is spent on research. I am planning to focus on MINOS, with some time spent on KTeV data analysis. By now I am the advisor of a Master degree student planning to investigate neutrino physics; and 3 undergraduate students researching topics related to neutrino and neutral hyperon physics.

During my Ph.D. in High Energy Physics I gained a wide ranging body of knowledge and experience in particle physics theory, computing, detectors and data analysis techniques. I have worked successfully within the KTeV collaboration and have been responsible for the investigation of the  $\Xi^0$  muon semileptonic decay,  $\Xi^0 \rightarrow \Sigma^+ \mu^- \bar{\nu}_\mu$ , using the data collected by KTeV

experiment. We have observed nine events among 300 million  $\Xi^0$  in the decay region of the experiment and published the results of this analysis at *Physical Review Letters*, v. 95, 081801, 2005. During this analysis I worked in Fermilab under the supervision of Prof. Carlos O. Escobar (thesis advisor) and Dr. Erik Ramberg (Fermilab).

I have obtained experience in working actively in a large collaboration and have presented new results in every internal meeting (Fermilab group of KTeV), collaboration meeting and at many conferences, such as DPF Meeting, BEACH Conference, ICFA School and Latin American Symposium in HEP, representing the KTeV collaboration and contributing to the proceedings of the conferences. Concerning my computational abilities in HEP research, the analysis developed during my Ph.D. required robust Fortran programming; the use of PAW as analysis package; and Monte Carlo simulation to implement the KTeV Monte Carlo package. Recently I have been working with statistics and simulation using C++, ROOT and R.

My work on MINOS may include the following:

1. Data Analysis
2. Monte Carlo Simulation
3. System maintenance

To conclude, I have a strong interest in the MINOS experiment, and I am sure that I can contribute to this collaboration. This affiliation will also be very useful to develop the High Energy Physics Group of the Federal University of Goiás (UFG).

Thank you for your consideration,

Your Sincerely,

Ricardo Avelino Gomes