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Application for a PhD scholarship

I would like to apply for a PhD scholarship at CMA, specifically for position 1 and 2 describe in the invitation with ref. nr 2008 / 7709.

I have just finished my Master's degree in Computational Science, where I have worked on the computational quantum mechanics project, specifically with extending the application framework for many-body calculations to the region of hypernuclear physics. As hypernuclear physics is basically an extension of nuclear physics, adding more particles to the equations, the same tools and methods are used, although they need to be generalized to accommodate additional particles.
My thesis has resulted in two articles as well as numerous presentations already and there is great potential for additional publications.

I would like to continue the work I started in my Master's project as a PhD scholar at CMA. As is evident from the research proposal enclosed, my work can be extended to a more general many-particle setting, as well as adding more complicated 3-body forces to the application framework.

With my extensive work experience and recently finished Master's degree in Computational Science, I consider myself an ideal candidate for a PhD scolarship at CMA. During my five years at the University, I have become strongly passionate about the merger of computer science, mathematics and physics. The possibility of creating computational experiments capable of exploring physical theories in the regions where conventional experiments cannot yet go, is and has been my prime motivator for pursuing an academic career. With the proper use of visualization techniques and graphical interfaces in the developed tools, this can also help students and emerging scientists to develop a deeper understanding of both the physical and mathematical subjects at a much earlier stage.

My main foci will be:

1. Develop efficient algorithms, using both mathematical results and my understanding of computer hardware to achieve accurate results.
2. Strive to develop parallellizable code, also for emerging hardware platforms as multicore processor, the GPU, used to render 3D graphics on modern computers, and the Cell processor used in recent supercomputers and gaming platforms.
3. Develop general algorithms, as the methods used are similar across several disciplines.