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RE: *Letter of recommendation for Dr. Peter Millington*

January 8, 2013

Dear Colleague,

It is with great pleasure that I write this letter of recommendation to strongly support the application of **Peter Millington** for a post-doctoral research position at your institution.

I have been knowing Peter since 2007, who did his Masters of Physics project on Higher-Dimensional Quantum Field Theories, under my supervision. His Masters of Physics Thesis received School's prize of excellence in 2008. Peter then started his PhD in September 2008 under my supervision and received his PhD degree recently in September 2012.

In the framework of his PhD thesis project, Peter has developed a new perturbative formalism for Non-equilibrium Thermal Field Theory in non-homogeneous backgrounds. As a consequence of this formalism, Peter was able to show how the so-called pinch singularities can be removed, without resorting to *ad hoc* prescriptions, or effective resummations of absorptive effects. He was able to derive new master time evolution equations for physically meaningful particle number densities that are valid to all orders in perturbation theory and to all orders in gradient expansion. The results of this analysis were presented in an extensive paper arXiv:1211.3152 (101 pages), submitted recently to JHEP.

I am very hopeful that Peter would be given the opportunity at your Physics Institution to capitalise fully on what I believe to be an important piece of work with great potential and far-reaching applications across BSM particle physics, cosmology and astro-particle physics. In particular, I firmly believe that Peter has completed a significant contribution to the field, paving the way for a plethora of phenomenological studies. As a post-doc, I am confident that his growing expertise in quantum field theory at finite temperature and density and in particular its application to out-of-equilibrium dynamics would make him a significant asset to Theoretical Groups who have related aspiring research programmes.

Peter is a charismatic speaker, giving rather pedagogical presentations on his research, but also on other topics of New Physics. Peter is a hard-working and a very intelligent physicist, full of initiative and great potential. Peter is rather open-minded to new physics projects and new directions of research, beyond the confines of his PhD thesis. With regard to former post-doctoral research associates in Manchester, Peter compares favourably with Björn Garbrecht (now Junior Professor at the Technical University in Munich), and he is technically more advanced than Frank Deppisch (now Lecturer at the University College of London). Peter has a critical and solid approach to new physics problems and ideas. On the personal side, Peter has a very pleasant character for someone to interact with. He has excellent communication skills within a research team.

I give my strongest possible support to the application of **Peter Millington** for a post-doctoral position at your Physics Department.

Yours sincerely,

(Apostolos Pilaftsis)