Final report on Professional Development Assignment for the of
2013/2014 academic year

Vladimir Nikiforov, Department of Mathematical Sciences

Main goal

The main goal of the PDA assignment was to write about 200 pages of a book with a tentative title "The p-spectral radius of graphs and hypergraphs". Towards this goal are the publications [1], [2], [3], [4] and [5], with a total of more than 160 pages of all new material. There is more work on this project done, with other manuscripts in preparation.

I have also added material to a project for another book, with a tentative title “Extremal Graph Theory via Spectra”. These new publications are [7], [8], [9] and [10], with total of 43 pages of new material. There is more work done on this project, with several manuscripts in preparation.

Universities visited

1. 2 months in Shanghai University. Collaboration with prof. Xiying Yuan and prof. Liying Kang. Five joint papers ([2], [4], [5], [8] and [10]) are written and another one is in preparation.
2. 1 month in Polytechnic University of Hong Kong. Collaboration with prof. Liqun Qi.

Talks given

Seminar talks in: Shanghai University, East China Normal University, Shanghai Jiao Tong University, Tongji University, the Federal University of Rio de Janeiro.

Invited talk at the ECM2013 conference held in December, 2013 at the Polytechnic University of Hong Kong.

Further impact of the visits

Visitor from China: Prof. Hailiang Zhang got funding form China Government to spend a year at the University of Memphis for joint research with me.

Visitor from Brazil: Doctoral student Celso Marques da Silva visited UoM for 12 days in December, 2014 doing joint research with me. We finished the paper [12] and two other papers are in preparation.

Publications written during the PDA year

10. with X.Y. Yuan, Maxima of the Q-index: forbidden even cycles, accepted in *Linear Algebra Appl.*, 16 pages.