Ivan Papić
J.J. Strossmayer University of Osijek
Department of Mathematics
Trg Ljudevita Gaja 6
HR – 31000 Osijek, Croatia

ACADEMIC AWARD AMAC-UK – FINAL REPORT

Project: Fractional Pearson Diffusions

Summary of the achieved objectives:

During my stay at the School of Mathematics, Cardiff University, UK, in collaboration with Prof. Nikolai N. Leonenko i studied many properties of Fractional Pearson diffusions, focusing mainly on problems regarding the construction of generally parametrized fractional Pearson diffusions.
Throu well known models such as Bernoulli-Laplace urn-scheme model and genetic Wright-Fisher model we constructed appropriate Markov chains and we proved these Markov chains (after specific space and time transformations) converge (in corresponding topology) to Pearson diffusions (Ornstein-Uhlenbeck diffusion, Cox–Ingersoll–Ross diffusion and Jacobi diffusion).
Afterwards, using specific change of time (via inverse of stable subordinator) in these processes, we obtain fractional Pearson diffusions (fractional Ornstein-Uhlenbeck diffusion, fractional Cox–Ingersoll–Ross diffusion and fractional Jacobi diffusion) which can be used as models for subdiffusive phenomena.
Now that these results are polished, we plan to publish them in the form of scientific paper in a suitable international scientific journal in the field of probability and statistics, which will greatly shape up my PhD thesis, and in that sense help me majorly as a PhD student in Croatia.

Osijek, March 13, 2017.