

# My story in a few lines

I studied Mathematics in my hometown Athens and took my diploma at 2004. After that, I followed a 2-year master's program in the same university, the National and Kapodistrian University of Athens in Statistics and Operational Research until 2006. Later on, I joined the Greek army for military obligations and found myself in Chios, a Greek island, where I studied Financial and Management Engineering. The next stop was in Samos, a Greek island too, still in the University of the Aegean, where I obtained my Phd in Applied Mathematics in 2016. My scientific works have been published in peer-reviewed international scientific journals and I have presented them abroad (Antwerp, Eindhoven, Linz). Moreover, I have been a reviewer for the *Journal of Computational and Applied Mathematics*, *Applied Numerical Mathematics*, *Mathematics and Computers in Simulation*, *Journal of Mathematical Finance* and *Mathematical Reviews*.

I taught Mathematics in the Department of Mathematics, track in Statistics and Actuarial-Financial Mathematics of the University of the Aegean from 2011 to 2015, I had lots of collaborations with students, the chance to attend and participate in international conferences and finally the opportunity to visit the University of Eindhoven in Netherlands, through the Erasmus+ Studies grant. In the last four months of 2016, I worked as a post-doc in Linz, Austria in a small project. After that, I was employed in the Alexander Technological Educational Institute of Thessaloniki as a temporary academic staff and as a collaborating academic staff in the Open University of Cyprus. In the spring semester of 2018-2019 I started my cooperation with the University of West Attica, where I still work. In the spring semester of 2020 – 2021 I was employed in the Hellenic American University. Apart from the teaching activities in undergraduate level, I also work (teach – organize) in postgraduate programs run by the University of West Attica.

## My scientific interests

I am exploring the efficiency of a new numerical method, which we call semi-discrete, for the numerical solution of non-linear stochastic differential equations (SDEs). One of the key features of the method is the preservation of the domain of the original SDE; in the context of financial mathematics, this domain is the non-negative real numbers. This method is able to overcome some problems that arise in the approximation procedure of non-linear SDEs, such as moment explosion.

We often meet highly non-linear (in the drift and diffusion coefficient) SDEs in the description of quantities of interest in the various fields of applied mathematics [bio-mathematics (Wright-Fisher), epidemic models (SIS), computational finance (the Heston 3/2-model which is super-linear and the mean-reverting CEV model which is sub-linear, the Ait-Sahalia model)].

We can combine the semi-discrete method with the idea of split-step methods constructing a hybrid method which may approximate the solution process of the SDE at hand, in the way we desire. So far, we have done this having in mind a strongly convergent method, possessing an eternal life-time (domain preservation) which does not explode and is explicit (in order to be easily implemented). The order of convergence of the method ( the truncated version ) is proved to be close to  $\frac{1}{2}$ .