Preface

Stochastic processes with memory are the focus of intensive mathematical, experimental, and computational studies due to the widening spectrum of applications in natural and social sciences. To engage more in these exciting new developments, the Research Center for Theoretical Physics (RCTP), Central Visayan Institute Foundation, organized the 7th *Jagna International Workshop: Analysis of Fractional Stochastic Processes: Advances and Applications* on 6–9 January 2014. The Workshop aimed to discuss (a) novel vis-à-vis standard approaches in fractional stochastic analysis; (b) experimental and theoretical highlights in applications to nanotechnology, mass rapid transit systems, critical transitions in economic systems, fractional quantum mechanics, polymer physics, among others; and (c) challenges, recent breakthroughs and open questions. The informal nature of the Workshop held in the coastal town of Jagna in the island province of Bohol, Philippines, was essentially meant to foster active interaction among speakers and participants so that possible research targets could be clearly defined.

The papers in this volume serve as a record of (i) review and pedagogical lectures given with graduate students and young Ph.D.'s as the target audience, and (ii) new research results. As in previous workshops of the series, camera-ready manuscripts were contributed by lecturers and speakers for the publication of the Proceedings to allow a wider audience to benefit from the Workshop.

The Workshop organizers wish to express their gratitude to the speakers, lecturers, and participants, as well as to the Workshop sponsors for the invaluable support. They are also grateful to the Workshop project assistants and staff who ensured the smooth running of the Workshop.

C. C. Bernido and M. V. Carpio-Bernido
Editors

WORKSHOP SPONSORS

The organizers are grateful to:

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WORKSHOP PROGRAMME

TIME	January 6, Monday	January 7, Tuesday	January 8, Wednesday	January 9, Thursday
8:30 – 9:30	REGISTRATION (9:00) WELCOME SESSION	S. C. Lim, "Some fractional and multifractional processes and their possible applications"	J. I. da Silva, "Asymptotic scaling for double intersection penalized Brownian motion: A white noise approach"	8:00 FREE DAY
9:30 – 10:00	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK	
10:00 – 11:00	L. Streit, "Fractional Brownian motion and polymers: Learning from each other"	S. V. Muminov, "Fractional dynamics of carrier transport in disordered organic semiconductors"	G. Shvchenko, "Adapted representations in fractional and mixed models with applications"	DISCUSSIONS and / or TOUR
11:00 – 12:00	J. B. Bornaes, "Self-repelling fractional Brownian motion – the case of higher order self-interactions"	C. P. Monterola, "Modeling urban dynamics: A complex systems approach"	C. C. Bernido, "Path summation with memory" (30 min)	
12:00 – 13:30	LUNCH	LUNCH	LUNCH	
13:30 – 14:15	R. G. Bacabac, "Probing the mechanics of molecules and cells with optical tweezers"	F. W. Wiegand, "A stochastic model for early AIDS infections"	M. C. O. Escobido, "Critical slowing down in a dynamic triopoly"	
14:15 – 14:30	W. Barreto, "On the diffusion of alpha-helical proteins in solvents"			
14:30 – 15:00	M. N. P. Confesor, "Fluctuation theorems in soft matter systems"	M. A. Go, "Four-dimensional photostimulation: Stimulating neurons in space and time"	H. Niere, "Measuring efficiency of international crude oil markets: a multifractality approach"	
15:00 – 15:30	COFFEE BREAK	GROUP PHOTO / COFFEE BREAK	COFFEE BREAK	
15:30 – 15:50	J. Tare, "Space fractional Schrödinger equation for a quadrupolar triple Dirac δ -potential"			
15:50 – 16:10	M. M. Nayga, "Lévy path integral approach to the fractional Schrödinger equation with δ -perturbed infinite square well"	R. Metzler, "Non-ergodicity and ageing in anomalous diffusion processes" (by Skype)		
16:10 – 16:30	R. J. Lachabian, "Robust method for trapping self-propelling particles"			
16:30 – 17:15	Tutorial Lecture I: G. Shvchenko, "Fractional Brownian motion in a nutshell"	Tutorial Lecture II: G. Shvchenko, "Fractional Brownian motion in a nutshell"		
19:00	WELCOME DINNER		Roundtable Discussion CLOSING	