

Memories of Yakov Nikitin

E. Orsingher

I first met Prof. Yakov Nikitin in Rome in 1994 and we immediately established friendly relations, which afterwards produced mutually interesting and productive interactions.

In 1996, he invited me for the first time to Saint Petersburg and I invited him to Rome. In this occasion he delivered a talk of unusual clarity which made me conclude that even for those who were not familiar with the subject like me all was so clear that I could repeat the essentials of what he presented. For this reason, we regularly invited him for talks and lessons on his favorite topics like U - and V -statistics.

In 1997, I was again in Saint Petersburg with my wife and my son Adriano. During this visit, we extended our friendship to his family, his wife Tanja and daughter Katja. In 1998, at the conference devoted to the 50th anniversary of the foundation of the chair of Probability Theory and Mathematical Statistics I went again to Russia and more or less starting from that year we begun working together on different subjects, sometimes suggested by him and sometimes by myself.

That year was related to the Russian default of August with a substantial reduction of incomes, the fall of rouble with respect to dollar. In September 1998,



Ya. Nikitin and E. Orsingher. Ravello (near Amalfi), October 1998

he came to Rome and I remember the fear and distress in the eyes of Yakov and Tanja when I met them at the airport. On that occasion, we started travelling together around Rome and in particular, in those weeks we visited the Amalfi peninsula, a sort of paradise for those who love history, nature, sea, and romantic landscapes.

During the sojourn of Yakov and his family (or alone) we visited many interesting places around Rome, so far to the North as the birthplace of Michelangelo (Caprino Michelangelo), San Gimignano, Assisi, the Casertan royal palace, the house of Manzu (now museum), the nearby gardens of Landriana. We visited also Ascoli Piceno where a famous retable by Carlo Crivelli is on the altar of the cathedral, the monasteries of Subiaco, the Etruscan museum of Tarquinia where he bought one of the plates that decorate his house. During his travelling through Italy, he bought plates decorated with some significant monument of the town visited. I also contributed to his collection with plates from China and Uzbekistan.



T. Nikitina, E. Orsingher and Ya. Nikitin. Bolsena, September 1997

We had a genuine common interest in art and frequently discussed the Italian art of Renaissance and the Russian painters of the 19th and 20th centuries. Thanks to him, I learned about the works of outstanding Russian artists and I got so enchanted that I visited the Russian museum of Saint Petersburg more than 40 times (in various occasions). In my house, I have books on the history of Saint Petersburg and about many painters and sculptors who worked in Russia mainly in the Nineteenth century. I also remember that during a trip to Sperlonga we stopped somewhere on the top of a hill and he recited some poems by Pushkin, which he knew by heart. It is almost impossible to enumerate all the Italian places we visited together but I must also mention Pitigliano, Sovana and Sorano in the southern part of Tuscany.



E. Orsingher and Ya. Nikitin.
Sperlonga, October 1998

Our scientific collaboration lay in three fields: functionals of Brownian motion, pseudo-processes and small deviations.

We studied some extensions of the arcsin law by analyzing the sojourn time of Brownian motion without drift in an interval $[0, t]$ subject to the condition that at time $u > t$, $B(u) = 0$. We also studied a similar problem (also in the case of a drifted Brownian motion) with different conditioning (with $u < t$, and $u > t$). These two works were published in *Statistics & Probability Letters* in 2000 and 2003.

One further area of collaboration where pseudo-processes related to third- and fourth-order heat-type equations were considered. For functionals of these pseudo-processes some explicit distributions were obtained by means of generalized forms of the Feynman-Kac functionals. The results of this research were published in *Journal of Theoretical Probability* in 2000.

The last area of scientific collaboration was related to small deviations of different processes with a technique that Yakov explained to me starting from 2001 during one of his sojourn in Rome.

I remember very well that he began to explain to me the Kac-Siebert formula, the way the eigenvalues must be elaborated during a trip we made to Caprarola, one of his favourite places around Rome. A further paper about small deviations concerned the Slepian and Watson processes and both were published in the *Journal of Mathematical Sciences* (in 2005 and 2006).

The interplay between pseudo-processes and their probabilistic counterparts is intensively investigated by young and eminent researchers of the St. Petersburg probability community. The study of small deviations is also one of the fields of active research of the St. Petersburg's school.

Thanks to Yakov, I visited Saint Petersburg many times, delivered several talks at the seminar in PDMI on Fontanka, and taught a course on fractional calculus at the Chebyshev Laboratory in 2012.

Thanks to him, I got acquainted with a whole group of outstanding mathematicians interested in probability, stochastic processes and mathematical statistics working in Saint Petersburg.

I also remember our discussions about the history of pre-revolutionary Russia, about each tsar. I visited Pavlovsk (where he spent his summer holidays), Gatchina (rather far from St. Petersburg), Staraya Ladoga (thanks are due to Andrej Borodin for this) and got the flavor of the cultural atmosphere of Russian Silver age in St. Petersburg.

I spent many hours in the *Brodyachaya Sobaka (Stray dog)*, smart underground restaurant with a small theater where we went together for the first time in 1996. Since then, it became my favourite place for dining, near the Brodsky museum, the Griboyedov canal, and the Russian museum. We had a different appreciation of the nearby Spas na Krovi Church (the Church on the Spilled Blood) which I consider a masterwork of the world architecture.

I think Yakov played an important role in my life and I must express my thanks to him for all interactions I had with him and his family.