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In Memoriam: Celebrating the Life and Legacy of Svetoslav Markov

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Svetoslav Markov (1943–2023)

It is with deep sadness and profound appreciation that we reflect on the life and scientific journey of Professor D. Sc. Svetoslav Marinov Markov, who departed this world at the age of 80. Professor Markov (or Sveti, as we, his colleagues and friends called him) has been an integral part of our lives, and together with our grief, we would like to celebrate his remarkable life and outstanding achievements in science. His career, spanning over five decades, has left an indelible mark by marrying biomathematics with interval analysis. Specifically, he focused his research on modeling biological processes under conditions of uncertainty, employing the tools of interval arithmetic. His work extended beyond ensuring the accuracy of input data, incorporating control over computational errors, showcasing a commitment to precision in scientific inquiry.

From the outset of his career at the Mathematical Institute of the Bulgarian Academy of Sciences, Prof. Markov delved into biomathematics, undertaking projects centered on the modeling of biological phenomena. His pivotal role in transforming the Processing of Biological Information Department into the Scientific Unit for Mathematical Modeling in Biology in 1985 underscored his dedication to advancing the field.

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The early years of Svetoslav Markov's research team.

Notably, Prof. Markov's leadership at the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences (IMI-BAS) culminated in the creation of the Biomathematics Section in 1996. Under his guidance, this section flourished, becoming a hub for innovative research at the intersection of mathematics and biology. He played a pivotal role in founding and chairing the Biomathematics section of the Union of Bulgarian Mathematicians in 1998.

Prof. Markov's scientific contributions encompassed a broad spectrum of biomathematical modeling. In enzymatic kinetics, he provided both theoretical insights and methodological advancements, with implications for substance exchange and nutrition. Collaborating closely with his students and colleagues, he developed an original methodology for constructing numerical algorithms, ensuring the verifiability of results.

One of his significant contributions lies in the realm of chemical synapse kinetics. His research, conducted collaboratively with biologists, not only resulted in dynamic models of synaptic transmission but also found diverse applications, ranging from understanding muscle fatigue to unraveling the mysteries of short-term memory and learning.

Prof. Markov's dedication to education was evident in his more than 50 years of lecturing at Sofia University's Faculty of Mathematics and Informatics. His impact reached beyond traditional academic boundaries, as he shared his knowledge with a new generation through the Master's program in Biomedical Engineering.

The influence of Prof. Svetoslav Markov is indelibly imprinted in the textbooks he co-authored, such as *Mathematics for Biologists*, presenting a harmonious blend of mathematical rigor and biological intuition. The chapter on

Dynamic Models in Biology demonstrates his profound grasp of the dynamic interplay between mathematical abstraction and biological reality. In addition to his role as a prolific researcher and educator, Prof. Markov demonstrated exceptional organizational prowess. His leadership in numerous international and national projects, coupled with his pivotal role in founding the Bulgarian section of GAMM (Gesellschaft fur Angewandte Mathematik und Mechanik – Society for Applied Mathematics and Mechanics), serves as a testament to his dedication to promoting collaboration and advancing scientific computing.

Here is how his colleagues and friends remember him:

Roumen Anguelov (University of Pretoria, South Africa, and IMI-BAS): Svetoslav Markov, a visionary figure in the field of Biomathematics

Svetoslav was a great enthusiast, researcher and leader in Biomathematics. He is the founder of the conference series Biomath and initiated the establishment of the Biomath International Steering Committee to oversee the conference series and associated publications, namely the journal Biomath and the journal Biomath Communications. With few exceptions (2020 and 2022), the conference has taken place every year since 2011 and is an established meeting forum for its field [1].

The journal Biomath has already published 12 volumes and is indexed by Scopus. Biomath Communications is at volume 10. Svetoslav's leadership, wisdom, and remarkable efforts are largely responsible for this success. His vision for creating a forum for fruitful interdisciplinary interaction, exchange of ideas in a wide spectrum of applications of mathematics to biological processes and keeping the scope as broad as possible while still meaningful, became a distinctive feature of both the conferences and the journals.

Further, Svetoslav's idea of having a School for Young Scientists as an integral part of the Biomath conferences promoted the field to young people, many of whom are already established researchers. When promoting Biomathematics, Svetoslav never put his research first. It was always about us, the researchers from all fields. Nevertheless, through his research, he led by example – introducing new ideas, forging connections between previously unrelated fields, and posing new questions. His most recent work focused on kinetic networks. A standard procedure derives a system of ordinary differential equations for the involved species. The flow of thought has always been from kinetic networks to a set of differential equations to their solution.

Among other things, Svetoslav posed the question: *Given a model, such as a function of time, can we construct a kinetic network that produces this model for one of the reagents?* It is not immediately clear why would one ask such a question. Well ... Svetoslav is known for asking unusual questions that provoke thought. Indeed, a kinetic network represents the mechanism of the actual chemical, biochemical or biological interactions, which may not be

At Biomath 2016, Kyustendil, Bulgaria.

Asking unusual questions could happen while rowing together.

immediately apparent in the solution of the differential equations. Therefore, by fitting a model to data we gain deeper insights when we know the kinetic network producing the model. Simple, isn't it. Well. I did not think of it.

Presenting the scientific achievements of Svetoslav Markov would be incomplete without acknowledging his significant contributions to interval analysis. He possessed a unique vision for connecting biomathematics and interval analysis, demonstrating a strong desire to unite these two fields [2]. Markov's work on the theoretical and practical applications of interval arithmetic establishes interval analysis as a suitable tool for mathematically modeling bio-systems, particularly those involving uncertainties.

Evgenija D. Popova (IMI-BAS):
Svetoslav Markov – leader and pioneer in reliable computing

I became a young researcher at the Problem Group for Mathematical Modeling in Biology within the Center for Biology at the Bulgarian Academy of Sciences in 1984 when Svetoslav Markov won a competition and became a professor and head of the Problem Group. He eagerly involved most scientists in the group in collaborative work on mathematical modeling, particularly focusing on his favorite topic at that time – interval analysis. He succeeded in engaging me in some of his interval-related works until I could independently pursue my own research and develop my own topics related to intervals. Our joint work [3] (with him and Neli Dimitrova) immersed me in the beauty, high potential, and versatility of the algebraic extension (based on improper intervals) of classical interval arithmetic. This article marked a turning point in Markov's scientific activities as well.

In his 1979 PhD thesis, he presented an original interval arithmetic theory, called *extended interval arithmetic*. Markov extended classical interval arithmetic by introducing four more arithmetic operations, named *inner interval operations*, motivated by the necessity of a more precise representation of the range of values for a given function. Based on his extended interval arithmetic, Svetoslav Markov and his students developed numerous efficient numerical methods and algorithms, affirming the importance and practical value of his interval arithmetic extension. Markov introduced the so-called *directed interval arithmetic*, a structure unifying the two interval arithmetic extensions. He then conducted a long series of investigations on the axiomatization of vector spaces based on intervals and convex bodies. In 2003, Svetoslav Markov defended his DSc thesis at IMI-BAS on the *Algebraic properties of intervals and convex bodies*. The axiomatization of abstract quasivector spaces was completed by his work *On the Algebra of Intervals* [4].

From his first scientific steps Markov was an active member of the so-called *reliable computing* community [5] and well-known with his scientific achievements. He has some practically important contributions in the numerical methods with result verification, in the interval algebra and analysis, in the computation with convex bodies, stochastic numbers and Hausdorff-continuous functions, as it can be seen from his scientific heritage [6].

I will remember Svetoslav Markov as a pioneer in many activities. In 1990, he organized the traditional SCAN conference (GAMM-IMACS International Symposium on Scientific Computing, Computer Arithmetic and Validated Numerics) for the first time outside Germany, in Albena, Bulgaria. Since then, he was a member of the Scientific Committee of the SCAN symposium; a member of the Editorial Board of the international journal Reliable Computing; a member of the IEEE Interval Standard Working Group, and among the developers of two IEEE Standards for Interval Arithmetic. Following the example of the

Svetoslav Markov – Head of the Department of Mathematical Modeling in Biology, Institute of Biophysics, BAS.

German society for mathematics and mechanics (GAMM), Markov proposed and founded in 1998 the first section of the Union of Bulgarian Mathematicians based on a scientific topic rather than a regional principle – Biomathematics and Scientific Computing. In 2001, the board of GAMM approved the Bulgarian section of GAMM, GAMM-BG, and Svetoslav Markov as its first president.

In the period of 1970-1990, when Bulgaria was behind the so-called Iron curtain, Markov traveled extensively to participate in scientific meetings. I will never forget when he returned from a conference held in Western Europe and gathered his research team. He would then share with us that scientists in Western Europe work on scientific projects and receive funding from such projects. *We have to start writing projects,* said Markov, *soon here in Bulgaria, we would have to earn our salaries from scientific projects.* Since 1991, Svetoslav Markov has led nine international and ten national funded research projects.

For about 20 years, Sveti and I were close collaborators in the field of reliable computing, engaging in numerous scientific projects, meetings, and various activities. He served as my boss, leading the Biomathematics department at IMI-BAS until 2010. I will remember Sveti Markov for his open mind and innovative ideas. I will miss our fruitful discussions. His scientific legacy will continue to inspire me and many other scientists worldwide.

Following the traditions of the MMSC'02, MMSC'01, MMSC'93 and Biomath'95 conferences – the international workshop MMSC'09, Velingrad, Bulgaria. MMSC stands for Mathematical Modeling and Scientific Computation.

Mihail Krastanov (IMI-BAS):
Svetoslav Markov – a strong-willed personality and a lifelong science contributor

Svetoslav was an extremely strong person. Once he had some health issues and decided to try therapeutic fasting. In such fasting, nutrition is crucial since the digestive system is completely shut down. And if something goes wrong, there can be serious consequences. Markov took this risk. I observed him fasting for more than 20 days, taking only water. Only once he allowed himself to drink a cup of tea and had to rest for an hour. But afterward, he shared that the whole experiment had been successful, and he felt much better.

Another thing that impressed me is that he worked actively until the very end. He was already seriously ill but organized and actively participated in the international conference Biomath 2023. He engaged in serious scientific work until his last moments.

May the radiant light of his soul continue to shine in the hearts of those who knew and loved him!

Irina Georgieva (IMI-BAS):
Svetoslav Markov – an eloquent and enthusiastic presenter of science

I will fondly remember Prof. Sveti Markov for his eloquence – whether during his presentations, where he diligently and joyfully explained his scientific results, or in the discussions at section meetings about past and future conferences, the journal, work, and future plans. I recall with pleasure the celebration on the occasion of his 75th birthday. Prof. Sveti Markov delivered a long and captivating presentation with tremendous enthusiasm, once again impressing

Department of Biomathematics (in 2007), IMI-BAS.

all of us with his sharp and fresh mind. After the presentation, we celebrated for a long time, and the section's room couldn't accommodate everyone who had come to share in the joy with Sveti.

Milen Borisov (IMI-BAS):
Svetoslav Markov – a lecturer committed to fostering the academic potential of his students

I had the honor of knowing Prof. Markov as a lecturer in *Mathematical Modeling in Biology* at the Faculty of Mathematics and Informatics, Sofia University, as a colleague at the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences, and as a friend. His influence on young people was truly remarkable. He consistently maintained a positive and optimistic attitude towards the students, expressing genuine joy in their intelligence and capabilities.

Reflecting on those times, it becomes evident that the most frequent words he directed towards us, the young students in the course, were words of encouragement and praise: *Well done, excellent!* Instead of criticism, he chose to uplift and inspire. It was not just about academic achievements; he sincerely celebrated our intellectual growth and talents.

I will not forget the time, even years later, when we were co-teaching the same course, how he called me on the phone and sincerely rejoiced in sharing with me: *Look at the smart people we have in the course. I'll send you a term paper to take a look at. It's practically suitable for a publication.* This gesture not only showcased his pride in his students but also demonstrated his commitment to fostering their academic potential.

In our conversations about life, he often acknowledged the challenges faced by the younger generation, offering words of encouragement: *In your time, young people, it's not easy. I really don't know how you cope. Bravo to you!* These words, spoken with genuine concern and admiration, underscored his deep understanding of the struggles faced by the youth.

Sveti, I am immensely grateful for the opportunity to have worked alongside you and experienced your unwavering support and encouragement. Your influence on the young minds you touched, including mine, is immeasurable. I miss the inspiration and guidance you provided, and I am thankful for the lasting impact you've had on us.

Meglena Lazarova (Technical University of Sofia):
Prof. Markov – an inexhaustible source of ideas, enthusiasm and an example to follow

My first impressions of Prof. Svetoslav Markov were from the Biomath 2014 conference, where I participated as a doctoral student with a poster. I was greatly charmed because I found myself among scholars who gave me many ideas and directions for future scientific projects. Now, in hindsight, I would say that fate gifted me this moment and this Person (with a capital P) – Prof. Svetoslav Markov, who left a bright trace in my memories and my scientific development.

In fact, the words to describe our friendship, collaboration, and professional synchrony would not be enough to express all these wonderful years of working with him. Simply put, whatever we planned or embarked on with Sveti, things happened – with a glance, with a word, with a lecture. There were numerous participations in Biomath conferences – Bachinovo, Będlewo (Poland), Pomorie.

Of course, his faith and optimism in my abilities and his unyielding spirit of positivity motivated the writing of numerous articles and the establishment of a joint master's course at the Faculty of Mathematics and Informatics, Sofia University "St. Kliment Ohridski". For me, he was an inexhaustible source of ideas, enthusiasm, beautiful conversations, an example to follow. He highly valued his colleagues, loved his work, and the people around him.

Whenever I was around him, I felt strength and tremendous creative potential. Thanks to him, I connected with wonderful people like Maria Lovdjieva, Neli Dimitrova, Roumen Angelov, Nina Pesheva, Nevena Litova, Milen Borisov, and Fatima Sapundzhi. I am grateful for all these nine years of friendship and collaboration.

Fatima Sapundzhi (South-West University "Neofit Rilski"):
Prof. Markov – a great organizer of Biomath conferences

I had the privilege of knowing Prof. Markov as a leading scientist in the field of biomathematics. However, our plan to develop mathematical models based on quantitative pharmacology and enzyme kinetics remained unrealized.

At Biomath 2019, Będlewo, Poland.

My memories of him are from the magnificent conferences we organized together at the University Center Bachinovo, South-West University "Neofit Rilski" in Blagoevgrad, Bulgaria – Biomath 2015 and Biomath 2016. His participation in Bulgarian folk dances was an important and delightful aspect of these conferences. I am grateful for the support Prof. Markov gave me and Meglena Lazarova during the Biomath 2019 conference in Będlewo, Poland. In the future, I hope that many scientists around the world will be inspired by his research.

Andrey Vassilev (Sofia University "St. Kliment Ohridski"):
Svetoslav Markov – a paragon of the refined scholar

Sveti Markov was a man full of enthusiasm and brimming with novel ideas. He was ever ready to try different approaches and venture out into new applications. Throughout our collaboration, Sveti was always the paragon of the refined scholar – guiding, suggesting alternatives, helping and never losing sight of the ultimate goal. He lived and breathed science. Whenever we talked, he would downplay personal difficulties and start discussing the next exciting idea to be pursued and explored. I learned many things from him but perhaps the most important one is to never stop and to keep seeking new horizons.

Evgenia Sendova (IMI-BAS):
Svetoslav Markov – a committed mentor, thinker, and avid learner

I had the honor of being part of Svetoslav Markov's professional journey within the Mathematical Modeling sector. During that time, I participated in early experiments involving computer simulations of cellular proliferation and differentiation, guided by the pioneers of Bio-Mathematical research in Bulgaria: Blagovest Sendov and Rumen Tsanev.

However, it took me a whole 50 years to truly appreciate Sveti's unique qualities as a mentor. This realization occurred in 2020 when the Research Science Institute (RSI), an international summer program organized jointly by CEE and MIT for students with outstanding research abilities, was threatened with cancellation due to Covid-19. I have been participating in this program as a tutor for 25 years, and I was confident that the Bulgarian academic community would provide a sufficient number of mentors to guide online students in their desired scientific fields.

Deep in thought and engaged in discussion – Prof. Markov in two reflective moments.

Prof. Markov promptly answered my request to mentor (alongside Meglena Lazarova) Sing Wei Lim, a student from Singapore in my tutor group, who had a fervent interest in molecular genetics. After reviewing her background, Professor Markov suggested that Sing Wei should delve into the realm of modeling in biology through dynamic systems. He recommended literature for her to delve into biomathematics, which included four textbooks and his article titled *Reaction networks reveal new links between Gompertz and Verhulst growth functions* [7]. This article opened up a broad area of exploration – how to stimulate biological data with sigmoidal functions generated by biochemical reactions.

Regarding his collaborative work with Meglena Lazarova and Andrey Vassilev *On Some Classes of Growth Functions and Their Links to Reaction Network Theory* [8], he proposed it as a potential source for Sing Wei's project task. Of course, Prof. Markov expected the specific project topic proposal to come from her. *It's more democratic that way; let her try on her own first*, were his words. Sing Wei responded immediately: *Although my mathematical background is mostly composed of what is covered in school, I love all aspects of Biology, and I'd be really eager to adapt to my mentor's field.*

Sing Wei diligently studied the literature recommended by her mentors, generated ideas for potential projects, acquired and integrated methods from diverse

fields such as computer science, mathematics, chemistry, and biology. Furthermore, she conducted computer experiments and analyzed the results from a biological perspective. And most importantly she *had a lot of fun exploring the field of Biomathematics in the process of scoping the project.*

Prof. Markov was impressed with Sing Wei Lim's overall performance: *From the outset, she proposed a highly ambitious project that required expertise in a multidisciplinary field, bridging computer science and engineering with mathematics, computer science, and natural sciences such as biology, medicine, and biochemistry. Throughout the project, she independently identified and studied numerous relevant references. The student formulated a contemporary, specific goal addressing, to my knowledge, unresolved problems in the field of cancer research. Following my guidance, she delved into the foundations of mathematical chemistry and dynamical systems. Ultimately, she conducted a series of computer experiments using measurement datasets she independently discovered in contemporary literature. The results of her work, accompanied by a well-crafted introduction and discussion, were presented both as slides and, notably, in the form of a scientific paper. She utilized modern editing and computational tools. Her work is nearly ready for submission to an appropriate scientific journal.*

In a personal communication, Prof. Markov observed that, upon reflecting on his earlier impressions of Sing Wei's achievements at RSI, he recognized that the components of her research project meet the criteria for a well-developed project in the CS&E field. This revelation underscores the significant scientific progress Sing Wei has made since her initial self-description as someone passionate (just) about biology. After the end of the program the RSI'20 Director Dr. Amy Silman expressed her gratitude to the mentors for their generous help: *Your student's work and her great experience working with you was evident. Thank you for your time, dedication, and effort in mentoring your student. You really rose to the challenge of 2020!*

For me, who was involved in the discussions between Sing Wei and Prof. Markov, most memorable will be his reflections after her misconception of some notions in different context, e.g. "negative":

We need to be careful about what "negatively" means. We should view negative numbers as a mathematical abstraction. In real life, especially in biology, nothing is negative in a mathematical sense. The rate parameters are always positive. However, a specific reaction may influence another reaction negatively. And further on: In fact, I should thank YOU because you've made me ponder some mysterious things. Isn't it a mystery that all living creatures grow exponentially, yet each one uses resources also utilized by others, causing exponential growth to be hindered and eventually halted due to the depletion of certain resources? Consequently, the living world reaches equilibrium despite the exponential growth of each individual specimen.

Sveti Markov remained a dedicated teacher, thinker, and avid learner until his life's end.

Nina Pesheva (Institute of Mechanics, BAS):
Svetoslav Markov – a devoted advocate for biomathematics, fostering connectivity among scientists from various areas

The person I knew as Svetoslav Markov was a man dedicated to science and science education. He pursued this with an energy and dedication that inspired others as well. He was convinced that in the present time, biomathematics is one of the most important fields that needs serious attention from mathematicians and physicists. Additionally, he observed that scientists working on similar problems in different institutes were not familiar with each other's work, and he strongly desired to change that. He dedicated his last years to these issues.

I first met Sveti Markov when I was a student in the Physics Department at Sofia University. At that time, he taught a class on Numerical Methods, which I attended. After that, I didn't see him for many years. I encountered him again when he had just retired from IMI; however, he had no intention of allowing that to slow him down. His passion for science, education, and spreading knowledge was truly inspiring. He worked many hours, more than people much younger than him. It was normal to find him in his office on Saturdays and Sundays. Full of ideas for new research, he feared that the time he had left might not be enough to realize some of them. Sveti was eager to revive a conference on the application of different methods from various areas of mathematics to various bio-problems (the conference was called *Biomath*) and turn it into an annual series of gatherings for scientists working in different areas.

With participants in Biomath 2016.

The conference was meant to be low-budget so that more scientists from Bulgaria and other countries, especially those lacking financial means, could attend.

He successfully attracted and motivated several people from different institutes of the BAS, such as IMI, Institute of Mechanics, Institute of Biophysics, and even individuals from other countries, to help him with organizational work. He was determined to start a journal (BIOMATH) where conference attendees could publish their work. The beginning was challenging – we had to learn how to obtain an ISSN for the journal, create the journal's website, find the right people willing to join the editorial board, establish the right style, and handle technical aspects, including advertising both the conference and the journal.

In the last ten years, his work extended beyond science, conference organization, and journal publishing. He organized several exhibitions devoted to Nestor Markov (one of his ancestors and a close associate of Vasil Levski). Sveti drew inspiration from Nestor Markov's energy, devotion, and multifaceted effectiveness, becoming an exceptionally inspiring individual in his own right. I am grateful for the opportunity to have worked alongside him.

Vanya Grigorova (Head of the Library of IMI-BAS):
Svetoslav Markov – a mediator between generations united in a mission

Is it a property of time to bring together people spiritually akin, despite being separated by years and even centuries, onto a common path? This path is continually expanding and winding, yet the traces endure. Reflecting on this, I find myself writing these lines in memory of the late Professor Svetoslav Markov. I spent many years working at the Library of the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences, and for me, Professor Markov was a respectful scholar in his approach to the library and a considerate reader.

However, the pivotal moment in our acquaintance was the organization of an exhibition dedicated to the Bulgarian Renaissance figure, lexicographer, and creator of some of the first educational aids in mathematics, Nestor Markov, who was the great-great-grandfather of Professor Svetoslav Markov. Besides the genetic closeness, the spiritual affinity between two individuals devoted to intellectual work and upholding values such as integrity, persistence in their beliefs, and humanity, was evident. The fact that a series of events related to Nestor Markov's contributions to lexicography and education in mathematics and physics were realized through the efforts of Professor Svetoslav Markov speaks volumes about his respect for his ancestors and the scientific literary legacy he left behind. At the same time, Professor Markov acts as a mediator between generations united in a mission – to remember the past, enlighten minds, and educate.

I am grateful to Professor Svetoslav Markov for the trust he personally showed me in my work as a librarian. He encouraged me to develop my skills, and we exchanged views on the role of the library in the life of a scholar. All of this was done with attention and warmth, never with the condescension of a scholar towards a person without titles. It was he who invited me to write

The Nestor Markov exhibition at the IMI-BAS library.

for the *Biomath Communications* journal, which surprised and worried me. I replied that I did not feel worthy enough to write for such a publication, but he explained with a smile that the journal covers not only strictly scientific topics, and I could freely share about my work. I postponed the offer for a while. I did not anticipate that I would be writing in his memory.

Now, I keenly sense the void left by his friendly support. On the flip side, the memories persist – how he would open the library door for a specific discussion, our early morning encounters (aware that he arrived even earlier, at 5 a.m.), and his enthusiasm for the folk dances we organized at the Institute. These were all profoundly human moments. And finally, how I encountered him on an exceptionally hot day at noon, when the sun was at its strongest, in poor health, but in a hurry to sort out matters related to the journals he published.

Maria Lovdjieva (long-time museum curator and researcher):
Sveti Markov – a bright example of patriotism and integrity

In 2015, Sveti Markov shared that in the following year, 2016, it would mark the 180th anniversary of the birth of his great-grandfather Nestor Markov, a beloved teacher and creator of textbooks, an education reformer, a high-ranking public servant, and a notable lexicographer. We talked and discussed extensively before we started visiting archives and libraries, places related to the activities and memory of Nestor Markov. We sought new and unfamiliar materials to remind and arouse interest in the personality and deeds of this worthy Bulgarian. After many weeks and months, facts and materials accumulated, and Sveti Markov himself was surprised and delighted to learn that there were many memories and facts about his great-grandfather that made his name widely known until the 1940s.

With the energy and dedication, he showed in his profession, Sveti Markov began organizing a series of events for the anniversary, including an exhibition

Opening of the Nestor Markov exhibition at the National Library "St. St. Cyril and Methodius", January 2017.

with textbooks and books titled *Nestor Markov in Lexicography and Education in Mathematics and Physics*, organized by IMI-BAS; another exposition in the central building of the Bulgarian Academy of Sciences; an exhibition titled *Nestor Markov – The Awakener* at the National Library "St. St. Cyril and Methodius", which traveled to many cities connected with the life and work of Nestor Markov. Throughout this time, Sveti Markov was the driving force behind every event, covering all financial expenses. Furthermore, in processing his great-grandfather's personal archive, he lost even more of his already poor eyesight, and until his last days, he wrote and read only on the computer, and with tremendous effort. In the family memory and filial gratitude, Svetoslav Markov left not only the name of a great scholar but also a shining example of patriotism and integrity.

As we bid farewell to a luminary in biomathematics, we celebrate the life and enduring legacy of Professor Svetoslav Markov. His passion for scientific inquiry has inspired and will continue to inspire generations of biomathematicians worldwide. May his work serve as a beacon, guiding future researchers in unraveling the intricate tapestry of life through the lens of mathematics.

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