

**P O S I T I O N**

of

Dr. Krassimir Todorov Georgiev, Assoc. Prof.

Institute of Information and Communication Technologies – BAS

Member of the Jury for the selection of the academic position "Professor"

Appointed by the Director of ICT-BAS (No. 177/19.07.2019)

Announcement:

*State Gazette, Issue. 41/21.05.2019*

Higher education area:

*4. Natural sciences, mathematics and informatics*

Professional area:

*4.5 Mathematics*

Scientific specialty:

*Computational Mathematics (High Performance Computing)*

Applicants:

*Dr. Emanouil Jordanov Atanasov, Assoc. Prof.  
(sole candidate)*

**1. Brief biographical information**

Emanuel Atanasov graduated in 1996 from the Faculty of Mathematics and Informatics at Sofia University "St. Kl. Ohridski". Master's degree in Mathematics (specialization in Mathematical Analysis). In 2003 he successfully defended his doctoral dissertation at CLPOI-BAS, where he was awarded the scientific title "Doctor". She is fluent in Russian, Spanish, French and English. Since 2003 he holds the academic position of Assistant Professor at the Institute of Mathematics and Computer Science - BAS. During the period 2002–2003 he was post-doc specializing in Saarbrücken, Germany, Saarland University.

**2. General description of the materials presented**

The materials presented to me by Assoc. Prof. Emanuel Atanasov include: (a) a curriculum vitae; (b) a diploma of the doctoral degree; (c) Certificate of Assoc. Article 2; (d) a certificate of occupied academic position at ICT-BAS and an internship in the specialty; (e) a list of the scientific publications submitted for participation in the competition; (f) copies of the scientific publications submitted for participation in the competition; (g) a list of citations; (h) copyright; (i) brief

summaries in Bulgarian and English of the scientific publications submitted for participation in the competition; (*j*) a statement of eligibility for the academic position of professor and (*k*) a declaration of non-existence of plagiarism. All the materials provided to me have been carefully prepared and I have no doubt about their veracity.

### **3. Reflection of the candidate's scientific publications in the literature (known citations)**

I accept the "*Citation List in WoS or Scopus, 2007 - 2015*" submitted by the applicant, which is made in detail and is complete and contains all the necessary information. I am amazed by the fact, and there is no explanation whatsoever that the period is until 2015, not until 2019 or at least until 2018. The way they are presented makes it easier to read and retrieve the necessary scientometric information. This list and the table to it contain **46** citations of **10** publications with his participation (one publication was cited 18 times, one - 12, one - 5 times, two - 3 times, five - 1 time).

### **4. General characteristics of the applicant's activities**

#### **4.1. Scientific and applied scientific activity**

I accept the submitted list of publications of the candidate for participation in the competition, including **21** titles, **six** of which in Impact Factors (**two - Q1, one - Q2, one - Q3, two - Q4**) and **eight** in issues **with SJR**. A review of the candidate's publications shows that the applicant does not have any individual publications submitted for the competition. Dr. Atanasov's co-authors are mainly from Bulgaria and Northern Macedonia. I have no doubt about Emanuel Atanasov's personal contribution to each of the publications. The main results of the applicant are in the field of the announced competition; they are presented in detail, in depth and understandable in the author's reference and can be defined in several sub-areas:

- (1) Theoretical development, software implementation and study of classes of algorithms using fine levels of concurrency and heterogeneous computing systems (publications numbered 2, 4, 12, 18 and 19);
- (2) Optimization of high performance calculations for modeling and application purposes (publications numbered 3, 5, 7 - 9 and 17);
- (3) Algorithms for the efficient generation of low-discrepancy series (publications numbered 11, 15, 20 and 21);

- (4) Schemes and services for efficient use of distributed computing environments (publications numbered 1, 6, 10 - 14, 16).

The scientific production of the applicant shows that he is a well-established, highly qualified scientist in the field of the announced competition, both in theoretical and applied aspect.

#### **4.2. Educational activities (work with students, PhD students and PhD students)**

I do not find explicitly mentioned teaching and pedagogical activity with students in the submitted documents.

#### **4.3. Contributions (scientific, scientific, applied)**

The applicant's scientific output shows that he is a well-established, highly qualified scientist with significant scientific and applied contributions in the field of computational mathematics, both in theoretical and applied aspects. Scientific, applied or applied contributions can be found in any of Emanuel Atanasov's publications. All such facts are duly and intelligibly described in his submission to the Reference for original scientific and applied contributions, with which I fully agree and do not consider it necessary to recount. For me personally, the most representative results are:

- (a) *The proposed new indicators for energy efficiency assessment.* Intensive Monte Carlo computing applications on heterogeneous HPC systems with an emphasis on energy efficiency and equipment costs are discussed. The importance of taking into account not only the scalability of HPC applications, but also the energy efficiency and cost of equipment is demonstrated. Conclusions are made on how to optimize the choice of GPGPU computing processors or servers. The results obtained are interesting and useful for application developers / users and computer resource providers; and
- (b) *Finding the answer to the question "What can Monte Carlo models do and what cannot be done effectively"* by looking at data classes that are important for practical calculations such as feature classes with limited derivatives and with Holder-type conditions as well as spaces similar to those considered by Korobov The theoretical

analysis of the work of some algorithms with improbable speed of convergence and the presented estimates of the computational complexity of two classes of algorithm my (deterministic and randomized) are important when considering problems related to the numerical integration of multidimensional functions and the calculation of linear functionals of the solution of a class of integral equations.

#### **5. Assessment of the applicant's personal contribution**

I have no doubt about the personal contribution of the candidate in each of the publications presented.

#### **6. Critical notes**

I have no critical remarks that would be relevant to determining my position and conclusion on this competition.

#### **7. Personal impressions**

I have known Emanuil Atanasov since the last time he was a student at FMI - Sofia University, and later from our joint work in IICT. I can confidently claim that he has established himself as an excellent, highly qualified specialist in his field of competence.

#### **8. Conclusion**

All of the above forms in me a positive attitude towards the candidate and I propose Assoc. Prof. Dr. Emanuil Yordanov Atanasov TO BE ELECTED as a "PROFESSOR" in the higher education area 4. Natural sciences, mathematics and informatics, professional area: 4.5 Mathematics, Scientific specialty: "Computational Mathematics (High Performance Computing)".

September, 2019

Sofia

Signature:

**NOT FOR  
PUBLIC RELEASE**

/Dr. K. Georgiev/