

## ATTITUDE OF REVIEWER

for Assoc. Prof. Dr. Emanouil Iordanov Atanassov  
for the competition for the acquiring the academic position "Professor"  
at the Institute of Information and Communication Technology at  
Bulgarian Academy of Sciences  
in area of higher education

4. Natural sciences, mathematics and informatics,  
professional field

4.5. Mathematics (Computational Mathematics),  
published in the Newspaper of State, issue 41 of May 21, 2019

Prepared by: Prof. Dr. Anton Iliev Iliev

By order №177/19.07.2019 of the Director of IICT at BAS I was appointed  
as a member of the Scientific Jury in the area of higher education 4. Natural  
sciences, mathematics and informatics, professional field 4.5. Mathematics  
(Computational Mathematics).

For the participation in the announced competition for "professor" has  
submitted documents Assoc. Prof. Dr. Emanouil Iordanov Atanassov.

I have received all the required documents for participation in the  
competition on paper and electronic media.

The candidate has grouped the scientific papers presented in the  
competition into several thematic areas, structured in the reference of scientific  
and scientific-applied contributions.

### **Main Contributions:**

Theoretical development, software implementation and research of classes  
of algorithms using fine levels of concurrency and heterogeneous computing  
systems (articles №№2, 4, 12, 18 and 19 of the submitted list of entries for  
participation in the competition). In particular: implementation of a library for  
genetic algorithms with the necessary scalability; algorithms using GPGPU  
resources for cryptographic computing; effective algorithms for multiplication of  
specific sparse matrices; GPGPU version of SIMPLE TS for the supersonic gas  
motion simulation task.

The second group of publications (№№3, 5, 7, 8, 9 and 17 of the submitted  
list of publications for participation in the competition) is devoted to optimization of

high-performance calculations for the purposes of modeling and applications. Conducted were: comparative study of deterministic and randomized algorithms for numerically integrating functions with different smoothness constraints; a Monte Carlo algorithm for modeling quantum phenomena (the so-called Wigner superfast transfer) arising in quantum wires; methods and metrics for estimating the energy efficiency of algorithms using heterogeneous computing systems.

In publications №№11, 15, 20 and 21, the candidate's developments are related to algorithms for efficient generation of low-discrepancy series. This area is a natural continuation of the research in his dissertation.

Optimized distribution of the use of distributed computing environments (publications №№1, 6, 10, 11, 12, 13, 14 and 16). In particular, I will highlight the regional Grid infrastructure in place, which includes services for monitoring the fulfillment of tasks and controlling the quality of services directly from consumers.

#### **Reference for publications and citations:**

The candidate submits 21 scientific publications in the competition for "professor", all published after "associate professor".

In Impact Factor Journals (IF Total: 6.555 - WoS Based) have been published 6 articles in IF Journals with grades Q1 to Q4 and 8 have been in journals/editions with SJR.

The requirement for the required number of papers not submitted for the "doctoral degree" (2003) is fulfilled, as well as for the acquisition of the academic position of "associate professor" (2006), which satisfies the requirements within the meaning of the ZRASRB, The Regularities for the Implementation of the ZRASRB and the Rules for the Specific Conditions for Acquisition of Academic Degrees and Occupation of Academic Positions in IICT for the Implementation of the ZRASRB.

The candidate has submitted a list of 46 citations, 1 of which is in IF journal: 1.628. The other 45 citations are in Scopus.

The minimal national requirements for required points by groups of indicators for the academic position of "professor" have been fulfilled.

The minimal required points by groups of indicators for the different scientific degrees and academic positions for Rules in BAS for acquiring the academic position "professor" are fulfilled.

The minimal required points by groups of indicators for the different scientific degrees and academic positions in IICT at BAS for PRAS in RB of IICT at BAS for acquiring the academic position "professor" are fulfilled.

I have not found any "plagiarism" in the candidate's work within the meaning of ZRAS in RB.

Assoc. Prof. Dr. E. Atanassov presented a report for participation in 21 scientific-research and educational projects, in 2 of which he is a leader and 5 of which are international and he have been a team leader of the Bulgarian participants.

All told so far gives me the conviction to give a positive assessment of the applicant's overall research.

## CONCLUSION

It is clear from the findings of the candidate's works presented in the competition that he have received sufficient scientific and scientific-applied contributions in the field of "Numerical Modeling".

My conclusion regarding the acquiring of academic position of "professor" announced in the competition by Assoc. Prof. Dr. Emanouil Iordanov Atanassov is POSITIVE.

I suggest to the Honorable Scientific Jury unanimously to propose to the Scientific Council of the Institute of Information and Communication Technologies at the Bulgarian Academy of Sciences to choose the candidate Assoc. Prof. Dr. Emanouil Iordanov Atanassov for the academic position of "professor" in area of higher education 4. Natural sciences, mathematics and informatics, professional field 4.5. Mathematics (Computational Mathematics).

September 2, 2019

Signature:

**NOT FOR  
PUBLIC RELEASE**

/Prof. Dr. Anton Iliev/