

**Dpt. Computer Applications in Science and  
Engineering Barcelona Supercomputing Center  
(BSC-CNS)**

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Jordi Girona 29  
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SUBJECT: Internship Artemii Sattarov

This is to confirm the internship of Artemii Sattarov at Barcelona Supercomputing Center-Centro Nacional de Supercomputación under my supervision starting on 07.03.2016 and ending on 31.06.2016. After finishing the official dates, Artemii continued as a research visitor until the 31.08.2016. The research topic was in the area of computational fluid dynamics (CFD) and high-fidelity large-eddy simulations looking at the modelling of a turbulent swirling flame of an aeronautical combustor. He gained new technical skills on High Performance Computing, unix shell scripting, HPC multiphysics applications with the code Alya; use of commercial codes like ICEM-CFD; theory and numerics featuring turbulent combustion and modelling approaches for turbulence/chemistry interactions. Based on this, his work was focused on the development of the full cycle of a practical CFD calculation in combustion: meshing, boundary conditions, initialization, fuel ignition, convergence analysis and quality checks, and comparison with reference data. The individual tasks were associated to the validation of the thermochemical database using a planar premixed flame and then, the numerical simulations using Reynolds-averaged Navier–Stokes and large-eddy simulation. Artemii has demonstrated advanced analytical, mathematical and physical skills with outstanding attitudes as an independent researcher and for team work. He has successfully troubleshooted encountered problems and demonstrated excellent problem-solving skills. In my opinion, Artemii deserves an excellent mark for the internship project.

Best regards,



**Daniel Mira Martínez, PhD**

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