Review on the dissertation work of Artem V. Sinitsa on the proposed thesis: «Analytical expressions for a solution of inverse convective heat and moisture transfer equations in the frequency domain for layered media terrain» for receiving his PhD degree in specialty 8D06103 – «Mathematical and Computer Modeling»

The dissertation work of the PhD Candidate Artem V. Sinitsa aims to derive the analytical expressions necessary for determination of physical characteristics of multilayered structure by the usage of novel inverse analysis methodology. For such reason several mathematical models have been formulated describing multi-physical processes in multilayered medium structure. To approbate the derived methodology, Artem has considered the heat and moisture transfer and thermoelastic stress analysis mathematical models seeking their analytical solutions in both frequency and real time domains applying general integral transforms. Further, several methods were sequentially utilized, such as the homogenization or the quasi-regularization for reducing dimensionality to derive the analytical formulas for direct computation of the physical characteristics of considered domain.

Artem has demonstrated authentic operation of advanced mathematical techniques, applying modern approaches in the field of applied mathematics. Moreover, there were derived engrossing theoretical results in terms of the derived functional mappings that leads to a fruitful base formulation towards further research investigations.

To culminate my review, I would note that Artem has successfully mastered skills of academic writing by publishing a research paper in high-ranking international journal as the first author with my co-authorship, which also justifies the high level of scientific interest of this dissertation work results.

Overall, during the implementation stage of this thesis work, the PhD Candidate has demonstrated the prominent compliance towards ethic and academic honesty standards. Thus, it could be concluded that this PhD dissertation work meets all necessary provisions and can be approved for the defense procedure in receiving the PhD degree of Artem V. Sinitsa in specialty 8D06103 – «Mathematical and Computer Modeling».

PhD Research Supervisor

(Signature, date)

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