

Abstract Submitted  
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**Multiprocessor Modeling of Dielectric Barrier Discharge Plasma Actuator** ALEXANDRE LIKHANSKII, VLADIMIR SEMAK, Penn State University, DMITRY OPAITS, MIKHAIL SHNEIDER, Princeton University, SERGEY MACHERET, Lockheed Martin — The dielectric barrier discharge (DBD) plasma actuators have been studied both experimentally and numerically for the last decade. The single processor numerical simulations were able to qualitatively describe physics of DBD using some simplifications, such as modeling smaller time and geometrical scales [1] or neglecting some physical processes. For the quantitative description of DBD all physical phenomena of plasma generation, dynamics and decay should be comprehensively described at the experimental conditions. The present work describes the successful development of the multiprocessor numerical model and characterizes the physics of the DBD. The applicability of the currently used approaches for the further optimization of the model, such as modeling small scale DBDs or omitting physical processes, will also be discussed 1. A.V. Likhanskii, M.N. Shneider, S.O. Macheret and R.B. Miles, J. Appl. Phys. **103**, 053305 (2008)

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