The Electro-Thermal Link Finite Element with 3D Spatial Functionally Graded Material Properties

Juraj Paulech[1, a)], Justín Murín[1], Vladimír Kutiš[1], Gabriel Gálik[1],
Vladimír Goga[1] and Tibor Sedlár[1]

[1] *Department of Applied Mechanics and Mechatronics, IAM, Faculty of Electrical Engineering and Information Technology, Slovak University of Technology in Bratislava, Ilkovičova 3, 812 19 Bratislava, Slovakia*

[a)] Corresponding author: juraj.paulech@stuba.sk

Abstract. The paper presents homogenization process of electric and thermal material properties in link structure made of Functionally Graded Material (FGM) with functionally prescribed change of these material properties in all three orthogonal directions inside the bar. Numerical experiment with developed link finite element (Finite Element Method – FEM) for this class of composite materials is also presented.