

DOI: [https://doi.org/10.15407/ techned2017.03.022](https://doi.org/10.15407/techned2017.03.022)

PHYSICAL NATURE OF STATIONARY ELECTRIC FIELD AND TERMINOLOGICAL DEFINITION OF RELATED QUANTITIES

Journal	Tekhnichna elektrodynamika
Publisher	Institute of Electrodynamics National Academy of Science of Ukraine
ISSN	1607-7970 (print), 2218-1903 (online)
Issue	No 3, 2017 (May/June)
Pages	22 – 28

Author

V.V. Sotnikov

Southwest State University, str. 50 let Oktiabria, 94, 305040, Kursk, Russia,
e-mail: VV_Sotnikov@mail.ru

Abstract

Stationary electric field of inner conductor volume of electric circuit is considered. It's shown that the field is created not by stationary currents but charges predominantly dispensed on conductor surface. Critical analysis of voltage and voltage drop terms is performed. The incorrectness of their definition by the international electrotechnical vocabulary and GOST is shown. Scientifically justified definitions are given. References 11, figures 2.

Key words: stationary electric field, voltage, voltage drop, term, definition.

Received: 30.11.2015

Accepted: 22.03.2017

Published: 15.05.2017

References

1. Vassetsky Yu., Mazurenko I., Dzyuba K. Asymptotic method of calculation of impulse electromagnetic field taking into account eddy currents in conducting body. *Tekhnichna Elektrodynamika*. 2014. No 5. Pp. 5–7. (Rus)
2. Korn G., Korn T. Mathematical Handbook. Moskva: Nauka, 1977. 832 p. (Rus)
3. Maxwell J.C. A Treatise on Electricity and Magnetism. Vol. I. Moskva: Nauka, 1989. 416 p. (Rus)
4. Interstate standard (the draft). Electrotechnics. Common concepts. Terms and definitions. Instead of the GOST 19880-74. Minsk, 2000. (Rus)
5. Polivanov K.M. Theoretical foundations of electrical engineering. Vol. 1. Linear electric chains with the concentrated parameters. Moskva-Leningrad: Energiia, 1975. 360 p. (Rus)
6. Sotnikov V.V. The causes of initiation and absence of the coulomb electric field in excited metallic bodies. *Izvestiia Rossiiskoi Akademii Nauk. Energetika*. 2001. No 1. Pp. 120–127. (Rus)
7. Sotnikov V.V. The sources of the coulomb electric field in metallic conductors and their effect on current. *Izvestiia Rossiiskoi Akademii Nauk. Energetika*. 2002. No 1. Pp. 104–111. (Rus)
8. Tamm I.E. Fundamentals of the Theory of Electricity. Moskva: Nauka, 1976. 616 p. (Rus)
9. Boyko V.S., Boyko V.V., Vydolob Yu.F. Fundamentals of electrical engineering. Kyiv: Politekhnika, 2004. 272 p. (Ukr)
10. Shimony K. Theoretical electrical engineering. Moskva: Mir, 1964. 774 p. (Rus)
11. International standard IEC 60050-121: 1998. International Electrotechnical Vocabulary. Part 121: Electromagnetism.

[PDF](#)