



Mirko Todorovski

Curriculum Vitae

Education

- Dec. 2004 **PhD in Electrical Power Engineering**, *Univ. Ss. Cyril and Methodius, Faculty of Electrical Engineering*, Skopje, Macedonia.
Thesis: An Innovative Approach in Power Flow Methods Suitable for Solving OPF Problems Using Genetic Algorithms
- Jun. 1998 **MSc in Electrical Power Engineering**, *Univ. Ss. Cyril and Methodius, Faculty of Electrical Engineering*, Skopje, Macedonia.
Thesis: The Admittance Summation Method and Its Applications
- May 1995 **BSc in Electrical Power Engineering**, *Univ. Ss. Cyril and Methodius, Faculty of Electrical Engineering*, Skopje, Macedonia.
Thesis: An Application of the DC Model for Transmission Networks Analysis Under Normal and Contingency Condition

Employment

- 2017–present **Professor**, *Univ. Ss. Cyril and Methodius, Faculty of Electrical Engineering and IT*, Skopje, Macedonia (<http://en.feit.ukim.edu.mk/>).
Department for Transmission and Distribution Power Systems (<http://pees.feit.ukim.edu.mk/>)
- 2012–2017 **Associate Professor**, *Univ. Ss. Cyril and Methodius, Faculty of Electrical Engineering and IT*, Skopje, Macedonia.
- 2007–2012 **Assistant Professor**, *Univ. Ss. Cyril and Methodius, Faculty of Electrical Engineering and IT*, Skopje, Macedonia.
- 2006–2007 **Teaching and Research Assistant**, *Univ. Ss. Cyril and Methodius, Faculty of Electrical Engineering and IT*, Skopje, Macedonia.
- 1997–2005 **Research Assistant**, *Research Center for Energy, Informatics and Materials of the Macedonian Academy of Sciences and Arts*, Skopje, Macedonia (<http://iceor.manu.edu.mk/>).

Computer skills

- Programming Fortran, Matlab, Python, Visual Basic, PHP.
- Other LaTeX, MS Office, VBA.

Research interests

Power Flow Methods in Transmission and Distribution Networks, Short Circuit Analysis, Transients in Power Systems, Grounding Systems, Optimization in Power Systems, Energy and the Environment – GHG.

Teaching

- Groundings and Grounding Systems in Power Networks, from 2009
<http://pees.feit.ukim.edu.mk/predmeti/zzs/index.php>
- Power networks, from 2017
<http://pees.feit.ukim.edu.mk/predmeti/em/index.php>
- High voltage transmission networks and systems, from 2017
<http://pees.feit.ukim.edu.mk/predmeti/vnms/index.php>

Past Teaching

- Power Systems Operation, from 2007–2018
<http://pees.feit.ukim.edu.mk/predmeti/rees/index.php>
- High Voltage Engineering 1, 2012–2017
<http://pees.feit.ukim.edu.mk/predmeti/tvn1/index.php>
- High Voltage Engineering 2, 2013–2017
<http://pees.feit.ukim.edu.mk/predmeti/tvn2/index.php>

Publications

- [1] V. Zdraveski and M. Todorovski, "Conductor size selection in radial distribution networks using robust optimization," *Sustainable Energy, Grids and Networks*, p. 101730, 2025. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S2352467725001122>
- [2] L. Grcev, B. Markovski, and M. Todorovski, "On communication tower grounding under lightning currents," *IEEE Transactions on Electromagnetic Compatibility*, vol. 67, no. 1, pp. 328–331, Feb 2025. [Online]. Available: <https://ieeexplore.ieee.org/document/10561587>
- [3] M. Todorovski, "A reduction method for radial distribution feeders: Ensuring parity in voltages and losses," *IEEE Transactions on Power Systems*, vol. 39, no. 2, pp. 4759–4762, March 2024. [Online]. Available: <https://ieeexplore.ieee.org/document/10384771>
- [4] V. Zdraveski and M. Todorovski, "A robust optimization model for optimal feeder routing and battery storage systems design," *Applied Energy*, vol. 374, p. 123978, 2024. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0306261924013618>
- [5] M. Todorovski and D. Rajičić, "Decomposing total power flows into contributions originating from power sources in loads, generators, and network elements," *Electric Power Systems Research*, vol. 233, p. 110433, 2024. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0378779624003213>

- [6] V. Zdraveski, J. Angelov, J. Vuletic, and M. Todorovski, "Load supplying capability under uncertain power demand conditions," *Electric Power Systems Research*, vol. 237, p. 111029, 2024. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0378779624009155>
- [7] M. Todorovski, L. Grcev, and B. Markovski, "An image method for evaluating partial inductance in conducting half-space," *IEEE Transactions on Electromagnetic Compatibility*, vol. 65, no. 6, pp. 1998–2005, 2023. [Online]. Available: <https://ieeexplore.ieee.org/document/10316234>
- [8] L. Grcev, B. Markovski, and M. Todorovski, "Lightning efficient counterpoise configurations for transmission line grounding," *IEEE Transactions on Power Delivery*, vol. 38, no. 2, pp. 877–888, April 2023. [Online]. Available: <https://doi.org/10.1109/TPWRD.2022.3200579>
- [9] V. Zdraveski, J. Vuletic, J. Angelov, and M. Todorovski, "Radial distribution network planning under uncertainty by implementing robust optimization," *International Journal of Electrical Power & Energy Systems*, vol. 149, p. 109043, 2023. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S014206152300100X>
- [10] V. Zdraveski, J. Angelov, P. Krstevski, A. K. Mateska, J. Vuletic, and M. Todorovski, "Decentralized controlled charging and vehicle-to-grid solution for voltage regulation in low voltage distribution systems," *Journal of Electrical Engineering*, vol. 73, no. 2, pp. 99–107, 2022. [Online]. Available: <https://doi.org/10.2478/jee-2022-0013>
- [11] L. Grcev, B. Markovski, and M. Todorovski, "Lightning performance of multiple horizontal, vertical and inclined grounding electrodes," *IEEE Transactions on Power Delivery*, vol. 37, no. 5, pp. 3782–3791, Oct 2022.
- [12] S. Malčeski, J. Vuletić, M. Todorovski, and J. Angelov, "Optimal sizing and placement of d-svc in radial distribution systems using an exhaustive analytical search," *International Journal of Applied Electromagnetics and Mechanics*, vol. 69, pp. 279–292, 2022. [Online]. Available: <https://doi.org/10.3233/JAE-210200>
- [13] L. Grcev, B. Markovski, and M. Todorovski, "General formulas for lightning impulse impedance of horizontal and vertical grounding electrodes," *IEEE Transactions on Power Delivery*, vol. 36, no. 4, pp. 2245–2248, Aug 2021. [Online]. Available: <https://ieeexplore.ieee.org/document/9430713>
- [14] D. Rajicic and M. Todorovski, "Participation of every generator to loads, currents and power losses," *IEEE Transactions on Power Systems*, vol. 36, no. 2, pp. 1638–1640, 2021. [Online]. Available: <https://ieeexplore.ieee.org/document/9293183>
- [15] M. Todorovski, J. Angelov, and J. Vuletić, "Solving tridiagonal symmetric systems of equations using circuit theory approach," *IAENG International Journal of Computer Science*, vol. 48, no. 3, pp. 663–671, Sep 2021. [Online]. Available: http://www.iaeng.org/IJCS/issues_v48/issue_3/IJCS_48_3_24.pdf

- [16] M. Todorovski and D. Rajičić, "Contribution of generator-load pairs in distribution networks power losses," *International Journal of Electrical Power & Energy Systems*, vol. 115, p. 105433, 2020. [Online]. Available: <http://www.sciencedirect.com/science/article/pii/S0142061519304661>
- [17] V. Taseska-Gjorgievska, M. Todorovski, N. Markovska, and A. Dedinec, "An integrated approach for analysis of higher penetration of variable renewable energy: Coupling of the long-term energy planning tools and power transmission network models," *Journal of Sustainable Development of Energy, Water and Environment Systems*, vol. 7, no. 4, pp. 615–630, 2019. [Online]. Available: <http://dx.doi.org/10.13044/j.sdewes.d7.0264>
- [18] D. Rajicic and M. Todorovski, "A double-exponential lightning current function suitable for use of different sets of input data," *IEEE Transactions on Power Delivery*, vol. 33, no. 4, pp. 2053–2055, Aug 2018. [Online]. Available: <https://doi.org/10.1109/TPWRD.2017.2711268>
- [19] J. Angelov, R. Taleski, J. Vuletic, M. Todorovski, P. Krstevski, and A. Krkoleva-Mateska, "Application of reduced PTDF matrix in iterative modified DC network model for cross-border capacity calculation with consideration of reactive power flow constraints," in *IEEE EUROCON 2017*, July 2017. [Online]. Available: <https://doi.org/10.1109/EUROCON.2017.8011148>
- [20] V. Zdraveski, M. Todorovski, D. Trajanov, and L. Kocarev, "Dynamic load balancing and reactive power compensation switch embedded in power meters," *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 64, no. 4, pp. 422–426, April 2017. [Online]. Available: <http://dx.doi.org/10.1109/TCSII.2016.2570338>
- [21] M. Pavlovski, A. Gajduk, M. Todorovski, and L. Kocarev, "Improving power grid stability with communication infrastructure," *IEEE Journal on Emerging and Selected Topics in Circuits and Systems*, vol. 7, no. 3, pp. 349–358, Sept 2017. [Online]. Available: <https://doi.org/10.1109/JETCAS.2017.2672679>
- [22] V. Gjorgievski and M. Todorovski, "Optimization of complex energy systems," *Journal of Electrical Engineering and Information Technologies - JEEIT*, vol. 2, no. 2, pp. 113–120, 2017. [Online]. Available: <http://jeeit.feit.ukim.edu.mk/index.php/jeeit/article/view/74>
- [23] J. Vuletić and M. Todorovski, "Optimal capacitor placement in distorted distribution networks with different load models using penalty free genetic algorithm," *International Journal of Electrical Power & Energy Systems*, vol. 78, pp. 174–182, June 2016. [Online]. Available: <http://dx.doi.org/10.1016/j.ijepes.2015.11.065>
- [24] J. Angelov, J. Vuletić, R. Ačkovski, and M. Todorovski, "An extension in cable modeling for grounding system," *IEEE Transactions on Industry Applications*, vol. 51, no. 6, pp. 5086–5094, Nov.-Dec. 2015. [Online]. Available: <http://dx.doi.org/10.1109/TIA.2015.2409807>

- [25] V. Zdraveski, M. Todorovski, and L. Kocarev, "Dynamic intelligent load balancing in power distribution networks," *International Journal of Electrical Power & Energy Systems*, vol. 73, pp. 157–261, December 2015. [Online]. Available: <http://dx.doi.org/10.1016/j.ijepes.2015.05.012>
- [26] D. Rajičić and M. Todorovski, "Two-component current waveform for lightning simulation," *IEEE Transactions on Electromagnetic Compatibility*, vol. 57, no. 5, pp. 1062–1069, October 2015. [Online]. Available: <http://dx.doi.org/10.1109/TEMPC.2015.2420581>
- [27] M. Todorovski and R. Ačkovski, "Equivalent circuit of single-core cable lines suitable for grounding systems analysis under line to ground faults," *IEEE Transactions on Power Delivery*, vol. 29, no. 2, pp. 751–759, April 2014. [Online]. Available: <http://dx.doi.org/10.1109/TPWRD.2013.2277887>
- [28] A. Gajduk, M. Todorovski, J. Kurths, and L. Kocarev, "Improving power grid transient stability by plug-in electric vehicles," *New Journal of Physics*, vol. 16, November 2014. [Online]. Available: <http://dx.doi.org/10.1088/1367-2630/16/11/115011>
- [29] J. Vuletić and M. Todorovski, "Optimal capacitor placement in radial distribution systems using clustering based optimization," *International Journal of Electrical Power & Energy Systems*, vol. 62, pp. 229–236, November 2014. [Online]. Available: <http://dx.doi.org/10.1016/j.ijepes.2014.05.001>
- [30] M. Todorovski and R. Ačkovski, "Reduction of ptdf matrix and its application in dc optimal power flow," *International Transactions on Electrical Energy Systems*, vol. 25, no. 9, pp. 1848–1859, April 2014. [Online]. Available: <http://dx.doi.org/10.1002/etep.1936>
- [31] A. Gajduk, M. Todorovski, and L. Kocarev, "Stability of power grids: an overview," *European Physical Journal - Special Topics*, vol. 223, pp. 2387–2409, June 2014. [Online]. Available: <http://dx.doi.org/10.1140/epjst/e2014-02212-1>
- [32] M. Todorovski, "Transformer voltage regulation – compact expression dependent on tap position and primary/secondary voltage," *IEEE Transactions on Power Delivery*, vol. 29, no. 3, pp. 1516–1517, June 2014. [Online]. Available: <http://dx.doi.org/10.1109/TPWRD.2014.2311959>
- [33] M. Todorovski and D. Rajičić, "An initialization procedure in solving optimal power flow by genetic algorithm," *IEEE Transactions on Power Systems*, vol. 21, no. 2, pp. 480–487, 2006. [Online]. Available: <http://dx.doi.org/10.1109/TPWRS.2006.873120>
- [34] —, "Handling three-winding transformers and loads in short circuit analysis by the admittance summation method," *IEEE Transactions on Power Systems*, vol. 18, no. 3, pp. 993–1000, August 2003. [Online]. Available: <http://dx.doi.org/10.1109/TPWRS.2003.814850>