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## **MODELING LEVELS OF ENVIRONMENTAL TEMPERATURES IN THE REGION OF RUSE, BULGARIA**

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### **Abstract**

The purpose of this article is to elaborate a mathematical model for the prediction of average monthly environmental/outside temperature (T) levels in the region of Ruse, Bulgaria. Based on the method of harmonic analysis, amplitudes and phases of the main harmonic oscillations were defined. The results show the dominance of the first three harmonics for the period of the research. Visualization of experimental and theoretical values of the model shows a high degree of consistency between the model and the data. The resulting models can be used for prediction and other tasks related to the construction of highly energy efficient microgrid systems that use photovoltaic systems as well as for the dynamics of some environmental pollutants.

*Key words:* harmonical analysis, mathematical model, microgrid systems, outside temperature

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