

## عنوان مقاله:

Investigation of the Statistical Behaviour of Thin ZnO-based Varistors Using a Monte Carlo Algorithm

## محل انتشار:

چهاردهمین کنفرانس مهندسی برق ایران (سال: 1385)

تعداد صفحات اصل مقاله: 6

## نویسندگان:

Mohammad Reza Meshkatoddini - *Electric Materials Department, Shahid Abbaspour University of Technology, (Tehran, Iran (Currently with the University of Toronto*

Steven Boggs - *Department of Electrical and Computer Engineering, University of Toronto, Canada*

## خلاصه مقاله:

In this paper a computational method has been used for investigation of the statistical behaviour of the thin zinc-oxide varistors. In a ZnO varistor, when a voltage is applied between the electrodes, there is certain number of grains, which does not present any non-linear characteristic and/or are nonconducting. Under the applied voltage, several current paths occur from one electrode to the other, which we call them the current percolation paths. From the previous works it is known that the overall current through the varistor depends on the block thickness as well as the percentage of nonconducting grains in the varistor. Then the number of grains between the electrodes crossing by the current is a statistical parameter, depending on the block thickness and percentage of nonconducting grains. In this work a Monte Carlo method has been used to study the statistical behaviour of the thin varistors. It is found that the number of ZnO grains providing the percolation path in thin varistors follows a lognormal distribution. The results can help us to have a better understanding of behaviour of the varistors, which enables us to make more realistic electric .models for these elements

## کلمات کلیدی:

ZnO varistors, statistical behaviour, Monte Carlo algorithm

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/55088>

