Least Squares Method Identification of Corona Current-Voltage Characteristics and Electromagnetic Field in Electrostatic Precipitator

Authors : H. Nouri, I. E. Achouri, A. Grimes, H. Ait Said, M. Aissou, Y. Zebboudj

Abstract : This paper aims to analysis the behaviour of DC corona discharge in wire-to-plate electrostatic precipitators (ESP). Current-voltage curves are particularly analysed. Experimental results show that discharge current is strongly affected by the applied voltage. The proposed method of current identification is to use the method of least squares. Least squares problems that of into two categories: linear or ordinary least squares and non-linear least squares, depending on whether or not the residuals are linear in all unknowns. The linear least-squares problem occurs in statistical regression analysis; it has a closed-form solution. A closed-form solution (or closed form expression) is any formula that can be evaluated in a finite number of standard operations. The non-linear problem has no closed-form solution and is usually solved by iterative.