

## SVM-Based Modeling of Mass Transfer Potential of Multiple Plunging Jets

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**Abstract :** The paper investigates the potential of support vector machines based regression approach to model the mass transfer capacity of multiple plunging jets, both vertical ( $\theta = 90^\circ$ ) and inclined ( $\theta = 60^\circ$ ). The data set used in this study consists of four input parameters with a total of eighty eight cases. For testing, tenfold cross validation was used. Correlation coefficient values of 0.971 and 0.981 (root mean square error values of 0.0025 and 0.0020) were achieved by using polynomial and radial basis kernel functions based support vector regression respectively. Results suggest an improved performance by radial basis function in comparison to polynomial kernel based support vector machines. The estimated overall mass transfer coefficient, by both the kernel functions, is in good agreement with actual experimental values (within a scatter of  $\pm 15\%$ ); thereby suggesting the utility of support vector machines based regression approach.

**Keywords :** mass transfer, multiple plunging jets, support vector machines, ecological sciences

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