

## Two-Dimensional Boundary Element Method for Modelling Creep Behaviour

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### ABSTRACT

A 2-dimensional initial strain direct boundary element method was proposed to numerically model the creep behaviour of metals. The boundary of the body was discretized into quadratic elements and the domain into quadratic quadrilaterals. The variables were also assumed to have a quadratic variation over the elements. Due to the time-dependent nature of creep, the solution was derived over increments of time. Backward Euler method and automatic time incrementation technique for updating the variables were implemented to assure stability and accuracy of results. An algorithm was developed to implement this method. The results were compared to analytical solutions and showed to be in good agreement with errors of 4.5%

**Keywords:** Boundary element method, creep and numerical model.