# SVR Prediction Algorithm for Crack Propagation of Aviation Aluminum Alloy

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## Abstract

Aluminum alloy materials is an important component material in the safe flight of aircraft. It is very important and necessary to predict the fatigue crack growth between holes of aviation aluminum alloy materials. At present, the investigation on the prediction of the cracks between two holes and multi-holes is a key problem to be solved. Due to the fatigue crack growth test of aluminum alloy plate with two or three holes was carried out by MTS fatigue testing machine, the crack length growth data under different test conditions were obtained. In this paper, support vector regression (SVR) was used to fit the crack data, and the parameters of SVR are optimized by grid search algorithm at the same time. And then the model of SVR to predict the crack length was established. Discussion on the results show that the prediction model is effective. Furthermore, the crack growth between three holes were predicted accurately through the model of the crack law between two holes under the same load form.

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