MODELING OF RELEASING ARROW STAGE WITH ARMAX MODEL

黃崑書,黃啟光,林國斌
Electrical Engineering
Engineering
simon@chu.edu.tw

Abstract

In this paper, the linear time invariant auto-regressive exogenous moving average (ARMAX) model is proposed to approximate the time series aiming trajectory during the last 1.5 seconds before releasing the string. The data is recorded by a high speed digital camera at the sampling rate 1200 frames/sec. There is an interesting finding that the second-order ARMAX model can fit the aiming trajectory along the vertical direction well, but for the horizontal direction it needs at least the ARMAX model of order 3 to obtain better approximation. This important phenomenon indicates that the horizontal aiming adjustment is more complicated than that along the vertical direction. This is observed from the aiming styles of most archers in the experiment.

Keyword：Aiming trajectory; ARMAX model; Time series analysis; Vertical and horizontal directions