with the right skew shape of the distribute function of Coupled Logistic system.

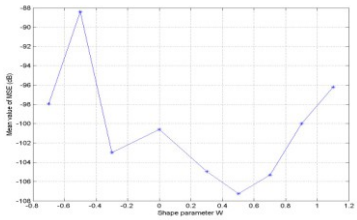

Fig. 5 Prediction performance versus shape parameter W for Henon map.

To prove the effect of the shape of a basis function to prediction accuracy, we applied another algorithm to Henon map and tested its performance. This algorithm has the basis function set $\{x, x^2, f(x)\}$, where $f(x)$ is defined by equation (2). Because Henon map is very simple, the length of training and testing data are 1000 and 500, respectively. Figure 5 is the simulation results, and it shows the mean MSE curve has a similar trend with the figure 4. The best performance appeared when W=0.5.

Both figure 4 and 5 illumine if the basis functions have the similar shape with the density function of under tested chaotic signals, the prediction performa-nces would be enhanced. Obviously, in this case, the basis functions can supply more accuracy statistic information, which is corresponddence with our point of view in [7].

4. Conclusion

In this letter, we attempt to improve a prediction algorithm performance by using asymmetric basis functions that show similar shape with chaotic signals' density function. Two different shape-variable functions were designed to replace general odd and even functions respectively. In simulation, the superiority of this method over symmetric function based method was proved, and the optimum shapes were also funded.

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