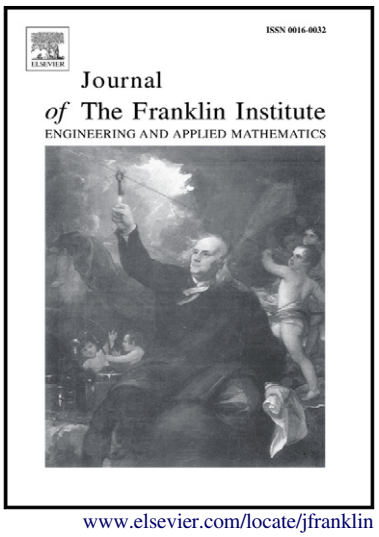

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Selection of window length for singular spectrum analysis*

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Abstract: Singular spectrum analysis (SSA) is a powerful approach to separating sources from the mixed signal. There is an important factor when SSA is used for extracting each source signal, i.e. a suitable window length should be selected for constructing the trajectory matrix. If the window length were not properly selected, the source signals could not be extracted from the mixed signal. In this paper, we propose a method of selecting the window length to reconstruct the trajectory matrix of mixed signal, based on which, we conduct two rounds of SSA-based blind source separation (BSS) tests on the artificial mixed signals, which are the mixture of two BPSK signals with different parameters. Then, we made the same test on a real-world single-channel mixed signal and a well-known series: American death series which shows the monthly accidental deaths in the USA between 1973 and 1978. The testing results validate the effectiveness of the proposed method.

Keywords: Singular spectrum analysis (SSA); Trajectory matrix reconstruction; Blind source separation (BSS).

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