

Driven stable nonlinear feedback shift registers (NFSRs) with inputs are not only able to limit error propagations in convolutional decoders, but also helpful to analyze the period properties of sequences generated by a cascade connection of NFSRs in stream ciphers. An NFSR is driven stable if and only if the reachable set is a subset of the basin. Due to lack of efficient algebraic tools, the driven stability of NFSRs with inputs has been much less studied. This paper continues to address this research using a Boolean control network approach. Viewing an NFSR with input as a Boolean control network, we first give its Boolean control network representation, which is characterized with a state transition matrix. Some properties of the state transition matrix are then provided. Based on these, explicit forms are given for the reachable set and the set of basin. Two algorithms for obtaining both the sets are provided as well. Compared with the exhaustive search and the existing state operator method, the Boolean control network approach requires lower computational complexity for those NFSRs with their stages greater than 1.