

The usual known methods for generating signals with given marginal probability and spectral properties cannot be applied to binary signals widely used in theoretical problems and communications systems. To overcome this difficulty, we first present some structural properties of power spectral densities, enabling the precise definition of the concept of spectral properties. This allows us to introduce a new method valid for symmetric binary random signals. This method uses some specific properties of filters with random impulse responses. Results of computer simulations show clearly the good performance of this method. Some extensions by using random thinning can further improve its performance.