

In this note, the filtering problem for discrete-time linear systems with time-correlated multiplicative measurement noises is considered where the vector consisting of all the multiplicative measurement noises can be described by a linear system model with white noise. By introducing several new recursive terms, a novel algorithm for optimal filtering of the system under consideration is proposed in the sense of linear minimum mean-square error. The proposed algorithm is recursive and has time-independent complexity. Computer simulations are provided to illustrate the performance of the proposed algorithm.