Further Results on Some Singular Linear Stochastic Differential Equations

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A class of Volterra transforms, preserving the Wiener measure, with kernels of Goursat type is considered. Such kernels satisfy a self-reproduction property. We provide some results on the inverses of the associated Gramian matrices which lead to a new self-reproduction property. A connection to the classical reproduction property is given. Results are then applied to the study of a class of singular linear stochastic differential equations together with the corresponding decompositions of filtrations. The studied equations are viewed as non-canonical decompositions of some generalized bridges. Moreover, calculations are shown to be more explicit for the class of Müntz transforms such as the kernels, the control of the order to be infinite and the ergodic properties.