

In this text we focus on systems of two linear ordinary differential equations wherein some of the coefficients are no longer integrable functions, but signed Radon measures instead. First we devote our attention to measure theory and generalized notion of derivative. Then we prove that the studied system has a unique solution (in a defined sense) and that analogous versions of known theorems such as Liouville's formula or variation of parameters still hold. This allows us to study various problems connected with more general second-order linear equations and compare the derived results with classical theory. In particular, we will consider the Sturm Comparison Theorem, Sturm-Liouville theory and Floquet theory (systems with periodic coefficients).