Adjoint first order linear equations with Stieltjes derivatives and Lagrange's identity

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Inspired by the existing results for ordinary differential equations and equations on time scales –which can be regarded as particular cases of differential equations with Stieltjes derivatives– we aim to obtain a version of Lagrange's identity in the context of first order linear differential equations with Stieltjes derivatives. To that end, we start this talk by introducing this type of derivative as well as covering some of its basic properties. From there, we move on to the study of the corresponding first order linear differential equation together with its adjoint equation and show that they satisfy a version of Lagrange's identity. Finally, we reflect on the relations between our version of this identity and the corresponding counterparts in the context of ODE and time scales.

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