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# Existence and multiplicity of solutions of Stieltjes differential equations

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We investigate a first order non-linear boundary value problem

$$u'_g(t) + b(t)u(t) = f(t, u(t)), \quad t \in [0, T]$$

with linear boundary conditions

$$u(0) = u(T) + k\,B(u),$$

where $k$ is a constant and $B$ is a linear functional. Note that boundary conditions extend the periodic case.

We use techniques from Stieltjes calculus and fixed point index theory to show the existence and multiplicity of solution.