Duality for Stieltjes integral equations

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We recall the classical concept of linear generalized differential equations, which are in fact Stieltjes integral equations. Then we propose a new definition of dual (or adjoint) Stieltjes integral equations, motivated by the fact that the product of solutions to dual equations is a constant function, and by the validity of Lagrange's identity. We provide a link to Volterra-Stieltjes integral equations, which leads to existence and uniqueness of solutions to dual equations. Our approach to duality encompasses similar concepts for classical ODEs, dynamic equations on time scales, and Stieltjes differential equations. This is a joint work with Ignacio Márquez Albés and Milan Tvrdý.

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