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# NUMERICAL METHODS FOR FRACTIONAL DIFFERENTIAL EQUATIONS WITH DELAY

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The aim of this talk is to present a prototype numerical algorithm for the solution of Fractional Differential Equations containing a Delay term ($FDDEs$). The equations we shall consider are of the form:-

$$D^{\alpha}y\left(t\right)=\lambda y\left(t-b\right)+f\left(t\right)$$

where $D^{\alpha}$ represents the $\alpha-$th derivative in the sense of Caputo, $(0<\alpha<1)$.

Through considering a combination of an established numerical algorithm for the solution of a Fractional Differential Equation ($FDE$) and a numerical algorithm for a Delay Differential Equation ($DDE$) a method for the FDDE is proposed. We provide examples of the algorithm (implemented using Matlab) applied to simple test problems and results are presented that indicate the order of the method.