Convolution integral in transient pipe flow

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This work concerns modeling of unsteady wall shear stresses during transient liquid pipe flow. The wall shear stress is presented in the way introduced first by Zielke (1968) as the integral convolution of a liquid local velocity changes and a weighting function. In the literature one will find many numerical solutions of the integral convolution. Most precise one is the classic solution presented by Zielke (1968) and a modified version of that solution presented by Vardy-Brown (2010). In 1975 Trikha was the first who presented an effective solution of the integral convolution. His solution based on an assumption that weighting function is a finite sum of exponential terms:

$$w_{apr} = \sum_{i=1}^{k} m_i e^{-n_i t}$$

Later in the literature one can find a modification of Trikha's effective solution. First Kagawa et all. (1983) modified Trikha's solution, and later Schohl (1993) did.
In this paper all known solutions of integral convolution will be compared. The final results of the comparison will help to choose a proper numerical solution of integral convolution, that characterized with the smallest errors.