

**Meeting:** 1004, Bowling Green, Kentucky, SS 1A, Special Session on Numerical Analysis, Approximation, and Computational Complexity: Interdisciplinary Aspects

1004-45-103      **Steven B Damelin\*** (damelin@georgiasouthern.edu), Department of Mathematical Sciences, Box 8093, Statesboro, GA 30460, and **Kai Diethelm**. *Approximation methods and stability of singular integral equations for Freud exponential weights on the line.*

In this paper, we show that there exist positive, finite numbers  $\mu$  which allow us to approximate singular integral equations on the line of the form

$$\mu w^2 f - K[f] = gw^{2+\delta}.$$

Here  $w$  is a fixed even exponential weight of smooth polynomial decay at  $\pm\infty$ ,  $K[\cdot] := H[\cdot w^2]/\pi$  is a weighted Hilbert transform and  $g$  is a fixed real valued function in a weighted locally Lipschitz space of order  $0 < \lambda < 1$ . This is joint work with K. Diethelm (Received January 19, 2005)