

962-45-778

Xiaoping Shen* (shenx@easternct.edu), Dept. of Math. and Computer Science, Eastern Connecticut State Univ., 83 Windham St., Willimantic, CT 06226. *A Comparison Study on Quadrature Based Method and Hybrid Sampling Series For an Abel - Type Equation*. Preliminary report.

The first kind Abel-type equation with separable kernel $\int_y^a k_1(y)k_2(x)(x^2 - y^2)^{1/2}u(x)dx = s(y)$ occurs frequently in many areas of study, such as biology, astrophysics and seismology. The problem is also interesting from the point of view of numerical computations. This is primarily because two reasons: 1. the equation is weakly improperly posed and 2. the right hand side function s is, in practical applications, only available from observations given by a discrete sequence with random noise: $\{d_i | d_i = s(y_i) + \epsilon_i, i = 1, 2, \dots, n; \epsilon_i \text{ a random error}\}$. This problem has been studied by R. S. Anderssen who used 'data functional strategy'. In this talk, we will introduce a method by using hybrid-sampling series associated with the Daubechies wavelet sampling function. Numerical results of the proposed method compared to other quadrature-based methods are given. (Received September 25, 2000)