1067-45-1868 **Can Huang*** (canhuang2007@gmail.com), 4500 Cass Ave. Apt 1008, Detroit, MI 48201, and **Zhimin Zhang** (ag7761@wayne.edu), 656, West Kirby, Faculaty Administration, Building 1131, Detroit, MI 48202. *Geometric and supergeometric convergence of spectral collocationd method for Volterra or Fredholm integral equations with akly singular kernels.*

A spectral collocation method is used to solve Volterra or Fredholm equations with weakly singular kernels and corresponding integral-differential equations by virtue of some identities. For a class of functions that satisfy a regularity condition (R): $\|y^{(k)}\|_{L^\infty[0,T]} \leq ck!R^{-k}$ (condition (M): $\|y^{(k)}\|_{L^\infty[0,T]} \leq cM^k$) on a bounded domain, we obtain a geometric (supergeometric) convergence rate in the L_∞ norm as well as a weighted L^2 norm for both types of equations. Numerical results confirm our theoretical analysis. (Received September 22, 2010)