1056-94-1840 **Mahmoud H Annaby*** (mannaby@qu.edu.qa), Dept Mathematics, Satatistics & Physics, Qatar University, Doha, 2713, Qatar, and **Hassan A Hassan** and **Omar H El-Haddad**. *A Perturbed Whittaker-Kotel'nikov-Shannon Sampling theorem.*

The sampling theorem of Whittaker (1915), Kotel'nikov (1933) and Shannon (1949) gives cardinal series representations for finite L^2-Fourier transforms at equidistant sampling points. Here we investigate the situation when the Fourier transform is replaced by a perturbed one. Thus the kernel of the transform will be of the type $\exp(-ixt)+\varepsilon(x,t)$, instead of $\exp(-ixt)$ in the unperturbed case. The perturbed kernel arises from first order eigenvalue problems with rank one perturbations. (Received September 22, 2009)