1001-34-430 **Ahmed Zayed*** (`azayed@math.depaul.edu`), Department of Mathematics, DePaul University, Chicago, IL 60614, **M. Annaby**, Faculty of Science, Cairo University, Cairo, Egypt, and **G. Freiling**, Department of Mathematics, University of Duisburg, Duisburg, Germany. *Discontinuous Boundary-Value Problems: Expansion and Sampling Theorems.*

This paper is devoted to the derivation of expansion and sampling theorems associated with $n-$th order discontinuous eigenvalue problems defined on $[-1, 1]$. The problem consists of two $n-$th order differential expressions, one defined on $[-1, 0)$ and the other on $(0, 1]$, with n boundary and n compatibility conditions at $x = 0$. We derive an eigenfunction expansion theorem for the Green's function of the problem as well as a theorem of uniform convergence of the Birkhoff series of a certain class of functions. Then we derive a sampling theorem for an integral transform whose kernel is the product of the Green's function and the characteristic determinant of the problem. (Received September 07, 2004)