1027-33-67          **Lance L Littlejohn\*** (`Lance_Littlejohn@baylor.edu`), Department of Mathematics, Baylor
University, Waco, TX 76798-7328. *Orthogonal Polynomials and Left-definite Spectral Theory.*

In this lecture, we will discuss the left-definite orthogonality of the classical polynomials of Jacobi, Laguerre, and Hermite. In particular we show that these polynomial sets which, of course, are orthogonal in the $L^2$ sense, form a complete orthogonal set in uncountably many Hilbert-Sobolev spaces; these are the so-called left-definite spaces associated with each of these orthogonal sequences. We also show that, in each of these left-definite spaces, there is a self-adjoint operator generated from the well known classical second-order differential expressions that have these polynomials as eigenfunctions. (Received February 14, 2007)