**Meeting:** 1004, Bowling Green, Kentucky, SS 6A, Special Session on Representation Theory

1004-22-120 **Chal Benson**, **Dariusz Buraczewski**, **Ewa Damek** and **Gail Ratcliff*** (ratcliffg@mail.ecu.edu), Department of Mathematics, East Carolina University, Greenville, NC 27858. *Differential Systems of Type (1,1) on Symmetric Spaces.*

Let $G/K$ be a non-compact irreducible Hermitian symmetric space. The algebra $\mathbf{D}(G/K)$ of left-$G$-invariant differential operators contains no first degree operators and has only one second degree generator, the Laplace-Beltrami operator.

We focus on *systems* of operators of type $(1,1)$. We show that all such systems can be derived from a decomposition $\mathfrak{p}_+ \otimes \mathfrak{p}_- = \mathcal{H}' \oplus \mathcal{L} \oplus \mathcal{H}^c$. Here $\mathcal{L}$ gives the Laplace-Beltrami operator and $\mathcal{H} = \mathcal{H}' \oplus \mathcal{L}$ is the celebrated Hua system.

For the Hua system $\mathcal{H}$ with $G/K$ of tube type, it is known that a smooth bounded function is $\mathcal{H}$-harmonic ($D_{\mathcal{H}} f = 0$) iff it is a Poisson-Szegö integral over the Shilov boundary. For non-tube domains, the real valued functions $f$ on $G/K$ satisfying $D_{\mathcal{H}} f = 0$ are the pluriharmonic functions. That is, $f$ is the real part of a holomorphic function on $G/K$.

Our main result asserts that for $G/K$ of rank at least two, a bounded real-valued function is annihilated by the *complementary Hua system* $\mathcal{L} \oplus \mathcal{H}^c$ iff it is the real part of a holomorphic function. (Received January 20, 2005)