Meeting: 1000, Albuquerque, New Mexico, SS 2A, Special Session on Several Complex Variables and CR Geometry

1000-32-34   **John T Anderson*** (`anderson@mathcs.holycross.edu`), Department of Mathematics & Computer Science, College of the Holy Cross, Worcester, MA 01610-2395, and **John Wermer** (`wermer@math.brown.edu`), Department of Mathematics, Brown University, Providence, RI 02917. *Rational Approximation on the Unit Sphere in $\mathbb{C}^2$.* Preliminary report.

For a smoothly bounded relatively open subset Ω of the unit sphere in $\mathbb{C}^2$ we derive, using a kernel $H(\zeta, z)$ introduced by G. Henkin, an analogue of the Cauchy-Green formula in the plane:

$$\phi(z) = \Psi(z) + \frac{1}{4\pi^2} \int_{\Omega} \overline{\partial}\phi(\zeta) H(\zeta, z) d\sigma(\zeta) - \frac{1}{4\pi^2} \int_{\partial\Omega} \phi(\zeta) H(\zeta, z) \omega(\zeta), \ z \in \Omega$$

valid for $\phi \in C^1(\overline{\Omega})$, where Ψ is a CR function on Ω, σ is the usual invariant measure on S, and $\omega(\zeta) = d\zeta_1 \wedge d\zeta_2$. We employ this formula to estimate the distance in $C(K)$ of ϕ to the CR functions on a neighborhood Ω of K. This requires an examination of the integral over $\partial\Omega$ appearing in the above formula, which we denote by $F_\Omega(z)$; in some circumstances we can show that F_Ω also defines a CR function on Ω, and thereby estimate the distance of ϕ to the CR functions on Ω in terms of $\overline{\partial}_b\phi$. For certain K we can show that $R(K) = C(K)$ by showing that the distance of $\overline{z}_j$ to the CR functions on Ω tends to zero as Ω shrinks to K. (Received July 30, 2004)