1023-58-685 **Gerardo A Mendoza*** (gmendoza@temple.edu), Department of Mathematics, Temple University, Philadelphia, PA 19122. *Hypoellipticity of $\Box_b$ and vanishing of cohomology.* Preliminary report.

Let $\mathcal{N}$ be a compact CR manifold of CR codimension 1, assume there is a global nonvanishing real vector field $\mathcal{T}$ whose action leaves the CR structure, $\mathcal{K}$, invariant. Assume further that there is a $\mathcal{T}$ invariant Riemannian metric on $\mathcal{N}$ for which $\mathcal{K}$ and $\mathcal{T}$ are orthogonal. Let $H^q_{\overline{\partial}_b}(\mathcal{N})$ be the kernel of the Kohn-Rossi Laplacian $\Box_b$ on q-forms. Then the Lie derivative $-i\mathcal{L}_{\mathcal{T}}$ acts on $H^q_{\overline{\partial}_b}(\mathcal{N})$ and as such, with the natural domain, is a selfadjoint Fredholm operator. We will link properties of the spectrum of $-i\mathcal{L}_{\mathcal{T}}$ with microlocal hypoellipticity of $\Box_b$. (Received September 20, 2006)