1046-32-1713 **Jennifer Halfpap*** (halfpap@mso.umt.edu), UM Dept. of Mathematical Sciences, 32 Campus Drive, Missoula, MT 59812. *Behavior of $\int \exp(rz - b(r))\,dr$ for Smooth b: Connections with the Szegö Projection Operator.*

Consider the hypersurface

$$M = \{\,(z_1, z_2) : \mathrm{Im}(z_2) = b(\mathrm{Re}(z_1))\,\}$$

where b is smooth and satisfies $\lim_{|r|\to\infty} b(r)/|r| = \infty$. For such M, the Szegö projection operator has an associated kernel

$$S[(z_1, z_2), (w_1, w_2)] = \iint_{\tau>0} \frac{e^{\eta[z_1+\bar{w}_1]+i\tau[z_2-\bar{w}_2]}}{N(\eta,\tau)}\,d\eta\,d\tau$$

where $N(\eta,\tau) = \int \exp(2[\eta r - \tau b(r)])\,dr$. Thus the nature and location of the singularities of S are intimately tied to the behavior of N. In this talk we explore size estimates for N as well as the location of the complex zeros of the entire function obtained by replacing η with a complex variable. We relate this to results obtained with Nagel and Wainger on the Szegö projection operator when M has a point of infinite type. (Received September 16, 2008)