Gajath K Gunatillake* (gajathg@math.purdue.edu), Purdue University 150 N. University Street, West Lafayette, IN 47907. *Spectrum of a Compact Weighted Composition Operator. Preliminary report.

For $\psi$ analytic on the unit disk and $\varphi$ an analytic map of the unit disk into itself, the weighted composition operator $C_{\psi,\varphi}$ is the operator on the Hardy space $H^2$ given by

$$(C_{\psi,\varphi}f)(z) = \psi(z)f(\varphi(z))$$

When $\psi$ is in $H^\infty$, the weighted composition operator is bounded for any analytic map $\varphi$ of the disk into itself, but for some $\psi$ and $\varphi$, the operator $C_{\psi,\varphi}$ is bounded even though $\psi$ is unbounded in the disk.

In this talk, we describe the spectrum of this operator when it is compact. Since $C_{\psi,\varphi}(1) = \psi$, if $C_{\psi,\varphi}$ is bounded on $H^2$, the function $\psi$ belongs to $H^2$ and can be extended to the unit circle. We will compute the spectrum in the case that $\psi$ is bounded away from zero on the unit circle, that is, $\inf\{|\psi(w)|: |w| = 1\} > 0$. (Received October 04, 2004)