Chem. 540
Instructor: Nancy Makri

FORMALISM PROBLEM 12

Unitary operators play a very important role in quantum mechanics. If $\hat{U}$ is a unitary operator, the operator

$$\hat{U}^+ \hat{A} \hat{U}$$

is called a unitary transformation of $\hat{A}$. Unitary transformations preserve important properties of operators. By using an arbitrary basis $\{\phi_n\}$, show that the trace of an operator is invariant under a unitary transformation.