Single State Mapping

$$\begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix} \mapsto 1 - n \qquad \begin{pmatrix} 0 & 1 \\ 0 & 0 \end{pmatrix} \mapsto \sqrt{n - n^2 + \lambda}\; e^{-iq}$$

$$\begin{pmatrix} 0 & 0 \\ 1 & 0 \end{pmatrix} \mapsto \sqrt{n - n^2 + \lambda}\; e^{iq} \qquad \begin{pmatrix} 0 & 0 \\ 0 & 1 \end{pmatrix} \mapsto n$$

$$\lambda \equiv \sigma^2 - \frac{1}{4}$$

"Spin Matrix Mapping": Meyer & Miller, JCP 71, 2156 (1979)

A method for mapping a 2x2 matrix
to action-angle variables

Correcting Choice of Lambda

	$\hat{S}^2$	λ
classical	s^2	0
quantum	$s(s+1)$	$\frac{1}{2}$
Langer modification	$\left(s+\frac{1}{2}\right)^2$	$\frac{3}{4}$

Value selected based on short-time analysis of 2-state populations and many-electron currents