Pensieve header: The Benkart-Witherspoon representation.

```
ℏ = (σ - ρ)/(α β); q = e^(ℏ α β);
y = (0 0; -e^ρ 0); a = α/(ρ - σ) (ρ 0; 0 σ); x = (e^-σ - e^-ρ)/ℏ (0 1; 0 0); b = β/(σ - ρ) (σ 0; 0 ρ);
MatrixForm /@
 {A = MatrixExp[-ℏ β a], B = MatrixExp[-ℏ α b], t = Simplify[β a - α b] , T = MatrixExp[ℏ t]}
```

$$\left\{\begin{pmatrix} e^{\rho} & 0 \\ 0 & e^{\sigma}\end{pmatrix}, \begin{pmatrix} e^{-\sigma} & 0 \\ 0 & e^{-\rho}\end{pmatrix}, \begin{pmatrix} \frac{\alpha\beta(\rho+\sigma)}{\rho-\sigma} & 0 \\ 0 & \frac{\alpha\beta(\rho+\sigma)}{\rho-\sigma}\end{pmatrix}, \begin{pmatrix} e^{-\rho-\sigma} & 0 \\ 0 & e^{-\rho-\sigma}\end{pmatrix}\right\}$$

```
{a.x - x.a == α x, x.A == q A.x, a.y - y.a == -α y,
  b.y - y.b == -β y, x.y - q y.x == ((1 0; 0 1) - T.A.A)/ℏ} // Simplify
```

{True, True, True, True, True}