

$$\int_{d\gamma}^{0|0} \exp \frac{i}{\hbar} \int_{dt}^{r|s} \left(\frac{m}{2} \dot{\gamma}^2 - \frac{m}{2} \omega^2 \gamma^2 \right) = \sqrt{\frac{m\omega}{2\pi i \hbar \sin \omega (s-r)}}$$

$$r|s \xrightarrow[\text{cl path}]{\gamma} \mathbb{R}: \quad {}^t \underline{\gamma} = -\omega^2 {}^t \gamma$$

$${}^t \gamma = \frac{\sqrt{x^2 + y^2 - 2xy \cos \omega (s-r)}}{\sin \omega (s-r)} \sin \left(\omega t + \tan^{-1} \frac{x \sin \omega s - y \sin \omega t}{y \cos \omega r - x \cos \omega s} \right)$$

$$\int_{dt}^{r|s} \frac{m}{2} \dot{\gamma}^2 - \frac{m}{2} \omega^2 \gamma^2 = \frac{m\omega}{2} \frac{\overbrace{x^2 + y^2} \cos \omega (s-r) - 2xy}{\sin \omega (s-r)}$$