$x' = x\cos\alpha + y\sin\alpha$, $dx' = dx\cos\alpha + dy\sin\alpha$

$y' = x\sin\alpha - y\cos\alpha$ $\quad dy' = dx\sin\alpha - dy\cos\alpha$

$$dx'^2 + dy'^2 = dx^2 + dy^2$$

<u>Lecture</u> No. 2 – Born & myself re. Hilbert space & Bhabha's intervention – ~~Math nature of q. quantum mechanics~~, sp. & gen. relativity – ~~Schrodinger's wave eqn~~ Schrodinger eqn – $\nabla^2\psi + \frac{8\pi^2 m}{h^2}(E - V)\psi = 0$ – notion of probability because of failure of causality. $\psi_E(x)$ is solving a linear diff eqn $\psi_E(x)\bar{\psi}_E(x)$ is the probability that x lies between x & $x + dx$ for the energy E – Math. nature of the three topics (i) Schrodinger eqn $\nabla^2\psi + \frac{8\pi^2\mu}{h^2}(E - V) = \frac{4\pi i \mu}{h}\frac{\partial\psi}{\partial t} = 0$ – linear nature (ii) Special relativity : $x' = x\cos\alpha + y\sin\alpha$, $y' = x\sin\alpha - y\cos\alpha$ is linear (iii) In general relativity no such linear transformations possible i.e. non-linear.

× (field of potential V)

$$\partial_\mu \beta_\mu \psi + \kappa\psi = 0 \quad \left(\kappa = \frac{mc}{\hbar} = \frac{1}{\text{Compton wavelength}}\right)$$