4. $(G^2(x) \times C)/\sim = L$ $\quad E_0^2(x) = G^2(x)/G^{-\infty}(x)$

$\downarrow$ is a smooth

$E_0^2(x)$ fiber bundle

$\alpha = \overline{Tr}_g (P^{-1} \partial P)$ is a 1-form on $G^2(x)$

$\partial + \alpha$ is invariant under $\sim$

$\Rightarrow$ is a connection on L

$\omega = \partial\alpha$ is the curvature of L

is a 2-form on $E_0^2(x) \subset A^2(x)$

$\omega = Tr_R (P^{-1} \partial P P^{-1} \partial P P^{-1} \partial_y P)$