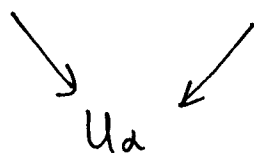


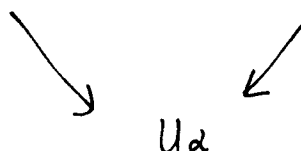
P67.

$$\pi^{-1}(U_\alpha) \xrightarrow{\varphi_\alpha} U_\alpha \times \mathbb{C}^n$$



$$\varphi_\beta \circ \varphi_\alpha^{-1} = g_{\beta\alpha}$$

$$\pi^{-1}(U_\alpha^*) \xrightarrow{\varphi_\alpha^*} U_\alpha \times \mathbb{C}^{n*}$$



$$\tilde{g}_{\alpha\beta} \equiv \varphi_\alpha^* \circ \varphi_\beta^{*-1}$$

$$\tilde{g}_{\alpha\beta}(\sigma) = \varphi_\alpha^* \circ \varphi_\beta^{*-1}(\sigma)$$

$$v \in \mathbb{C}^n \quad \tilde{g}_{\alpha\beta}(\sigma)(v)$$

$$= \varphi_\alpha^* \circ \varphi_\beta^{*-1}(\sigma)(v) = \varphi_\beta^{*-1}(\sigma)(\varphi_\alpha^{-1}(v)) = \sigma(\varphi_\beta \circ \varphi_\alpha^{-1}(v))$$

$$= \sigma(g_{\beta\alpha}(v))$$

$$\Rightarrow \tilde{g}_{\alpha\beta}(\sigma)(v) = \sigma(g_{\beta\alpha}(v))$$

By using matrix notation,

$${}^t(\tilde{g}_{\alpha\beta}\sigma)v = {}^t\sigma g_{\beta\alpha}v$$

$$\Rightarrow {}^t(\tilde{g}_{\alpha\beta}\sigma) = {}^t\sigma g_{\beta\alpha}$$

$$\Rightarrow \tilde{g}_{\alpha\beta}\sigma = {}^tg_{\beta\alpha}\sigma = {}^tg_{\alpha\beta}^{-1}\sigma \quad \text{since } g_{\alpha\beta}g_{\beta\alpha} = 1$$