

$$(K^{-1})_S^U = -\frac{z^{*3}(1-A|z|^2)P'(y)}{e^{\tilde{K}/2}P''(y)}, \quad (K^{-1})_T^U = \frac{(T+T^*)z^{*3}(1-A|z|^2)}{e^{\tilde{K}/2}(1-\frac{\tilde{n}}{3}B(1-A|z|^2)\|\Pi\|)},$$