the above exact sequence is the top row in the diagram

$$\begin{tikzcd}
\mathrm{Ext}^1(S; I, \mathcal{O}) \arrow[r] \arrow[d, leftrightarrow] & \bigoplus_{p\in Z} \Lambda^2 T_p'(S) \arrow[r] \arrow[d, leftrightarrow] & H^2(S, \mathcal{O}) \arrow[d, leftrightarrow] \\
\mathrm{Ext}^1(S; I, \mathcal{O})^* & \bigoplus_{p\in Z} \Lambda^2 T_p'^*(S) \arrow[l] & H^0(S, \Omega^2) \arrow[l, "\rho"']
\end{tikzcd} \quad (***)$$

$\ulcorner$ $\underline{\mathrm{Ext}}^q_{\mathcal{O}}(\mathcal{O}_Z, \mathcal{O})_p \cong \mathrm{Ext}^q_{\mathcal{O}}(\mathcal{O}_{Z,p}, \mathcal{O}_p) = 0$ if $q \neq 2$.

$\underline{\mathrm{Ext}}^2_{\mathcal{O}}(\mathcal{O}_Z, \mathcal{O})_p \cong \mathcal{O}_{Z,p} = \mathcal{O}_p/I_p \cong \mathbb{C} \cong \Lambda^2 T_p'(S)$

since $T_p'(S) \cong \mathbb{C}^2$. $\lrcorner$

The bottom row are the dual vector spaces, where the dual of $\mathrm{Ext}^2(S; \mathcal{O}_Z, \mathcal{O})$ is $H^0(S, \mathcal{O}_Z \otimes \Omega^2)$ by the duality theorem (I). By functoriality, the mapping $\rho$ is simply the restriction of a global holomorphic 2-form on $S$ to each point $p \in Z$.

$\ulcorner$ $\mathrm{Ext}^2(S; \mathcal{O}_Z, \mathcal{O}) = H^0(S, \underline{\mathrm{Ext}}^2_{\mathcal{O}}(\mathcal{O}_Z, \mathcal{O}))$ since $\underline{\mathrm{Ext}}^q_{\mathcal{O}}(\mathcal{O}_Z, \mathcal{O}) = 0$, $0 \leq q < 2$.

$$\Rightarrow \underline{\mathrm{Ext}}^2_{\mathcal{O}}(\mathcal{O}_Z, \mathcal{O}) = \bigoplus_{p\in Z} \mathcal{O}_{Z,p} = \bigoplus_{p\in Z} \Lambda^2 T_p'(S)$$

$$\begin{aligned}
\Rightarrow \mathrm{Ext}^2(S; \mathcal{O}_Z, \mathcal{O}) &= H^0(S, \underline{\mathrm{Ext}}^2_{\mathcal{O}}(\mathcal{O}_Z, \mathcal{O})) \\
&= H^0(S, \bigoplus_{p\in Z} \mathcal{O}_{Z,p}) \cong H^0(S, \bigoplus_{p\in Z} \Lambda^2 T_p'(S)) \\
&= \bigoplus_{p\in Z} \Lambda^2 T_p'(S).
\end{aligned}$$