

$$\sigma_{\lambda-1}(\sigma_{\lambda}^{-1}(\kappa_a^{\ell})) \in \{\kappa_a^{\ell-1}, \kappa_b^{\ell-1}\} \cup V(\mathcal{K}^{\ell}) \cup (V(\mathcal{S}_a^{\ell}) \setminus \{\kappa_a^{\ell}\}),$$