

$\mathfrak{H} \supset A$ disc

$\mathfrak{H} \setminus A \supset \underset{\text{hlg}}{\mathbb{C}}^{\text{null}} \mathfrak{H} : \bar{\mathfrak{L}} \subset \mathfrak{H} \setminus A$

$$\gamma \in \mathfrak{H} \setminus A \triangleleft_{\omega} \mathbb{C} \xrightarrow{\text{RES}} \int_{dw/2\pi i}^{\mathfrak{L}} w\gamma = \sum_a^{\mathfrak{H} \setminus \bar{\mathfrak{L}}} a_{\#} \# \gamma_{-1} = \sum_a^{\bar{\mathfrak{L}} \cap A} a_{\#} \# \gamma_{-1}$$

$\mathfrak{H} \supset \bar{\mathfrak{L}} = \bar{\mathfrak{L}} \cup \bar{\mathfrak{L}} \text{ cpt} : \mathfrak{H} \supset A \xrightarrow{\text{discr}} \bar{\mathfrak{L}} \cap A = \bar{\mathfrak{L}} \cap A \text{ fin} \Rightarrow$

$$\bigvee_{r>0} \bigwedge_a^{\bar{\mathfrak{L}} \cap A} \text{disj } \bar{\mathfrak{C}}_a^r \subset \bar{\mathfrak{L}} \subset \mathfrak{H} \Rightarrow \bar{\mathfrak{C}}_a^r \cap A = \bar{\mathfrak{C}}_a^r \cap \bar{\mathfrak{L}} \cap A = a$$

$$z \in \mathfrak{H} \setminus \bar{\mathfrak{L}} \cap A \Rightarrow z_{\#} \# \gamma_{-1} = 0$$

$$\mathfrak{H} \setminus \bar{\mathfrak{L}} \cap A = \mathfrak{H} \setminus A \cup \mathfrak{H} \setminus \bar{\mathfrak{L}} \begin{cases} z \in \mathfrak{H} \setminus A \Rightarrow z_{\#} \# \gamma_{-1} = 0 \\ z \in \mathfrak{H} \setminus \bar{\mathfrak{L}} \Rightarrow z_{\#} = 0 \end{cases}$$

$$\text{cycle } \mathfrak{t} = \mathfrak{L} - \sum_a^{\bar{\mathfrak{L}} \cap A} a_{\#} \bar{\mathfrak{C}}_a^r \Rightarrow \mathfrak{t} = \bar{\mathfrak{L}} \cup \bigcup_a^{\bar{\mathfrak{L}} \cap A} \bar{\mathfrak{C}}_a^r \subset \mathfrak{H} \setminus A : z_{\#} \mathfrak{t} = z_{\#} \mathfrak{L} - \sum_a^{\bar{\mathfrak{L}} \cap A} a_{\#} z_{\#} \bar{\mathfrak{C}}_a^r$$

$$\bar{\mathfrak{L}} \subset \mathfrak{H} \setminus A : \mathfrak{t} \underset{\text{hlg}}{\mathbb{C}}^{\text{null}} \mathfrak{H} \setminus A$$

$$z \in \mathbb{C} \setminus \bar{\mathfrak{L}} \Rightarrow z_{\#} = 0 = z_{\#} \bar{\mathfrak{C}}_a^r \Rightarrow z_{\#} \mathfrak{t} = 0$$

$$z \in \bar{\mathfrak{L}} \setminus \mathfrak{H} \setminus A = \bar{\mathfrak{L}} \cap A \Rightarrow z_{\#} \mathfrak{t} = z_{\#} \mathfrak{L} - \sum_a^{\bar{\mathfrak{L}} \cap A} a_{\#} \underbrace{z_{\#} \bar{\mathfrak{C}}_a^r}_{= z_{\#} \delta_a} \equiv z_{\#} \mathfrak{L} - z_{\#} 1 = 0$$

$$\Rightarrow 0 = \int_{dw/2\pi i}^{\mathfrak{t}} w\gamma = \int_{dw/2\pi i}^{\mathfrak{L}} w\gamma - \sum_a^{\bar{\mathfrak{L}} \cap A} a_{\#} \underbrace{\int_{dw/2\pi i}^{\bar{\mathfrak{C}}_a^r} w\gamma}_{= a_{\#} \gamma_{-1}}$$