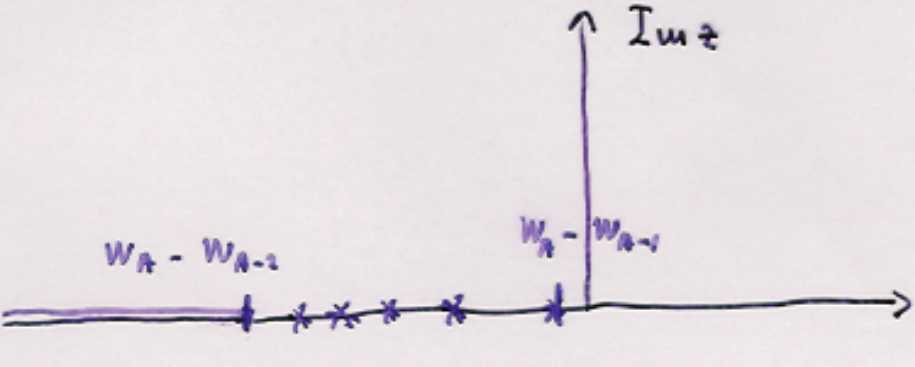
Analytic structure of the hole Green's function $G^h(z)$



poles $\Rightarrow$ bound states $|n\rangle$ of the $(A-1)$ system

$\lambda_n(E)$ = residue of the corresponding pole

left-hand cut $\Rightarrow$ continuum states of the $(A-1)$ system

$$\lambda_c(E) = \frac{1}{2\pi} \frac{\Gamma_c(E)}{\left[E - W_A + F_c(E)\right]^2 + \left[\frac{\Gamma_c(E)}{2}\right]^2}$$

$F_c(E) = \langle T + V(E) \rangle$ average values of Hermitean and anti-Hermitean part of the hole self energy operator $(V + iW)$

$\Gamma_c(E) = 2\langle W(E) \rangle$

φ_α eigenfunctions of a non local energy dependent Hamiltonian involving the mass operator or of the Feshbach optical Hamiltonian

PURE SHELL MODEL: only real poles at energies corresponding to the various bound states occupied in the Target

φ_n = bound state wavefunction λ_n = occupation probability of the single particle bound state