

3.3 Dispersionsrelationen

ω - Ebene

$$\omega = \pm \omega_j \sqrt{1 - \left(\frac{\gamma_j}{2\omega_j}\right)^2} + i \frac{1}{2} \gamma_j$$

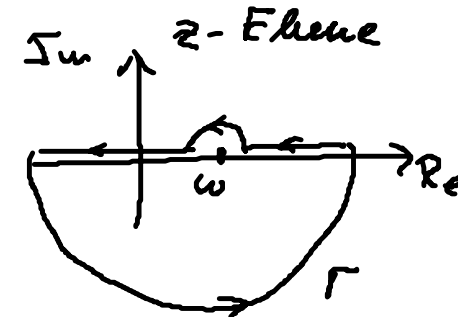
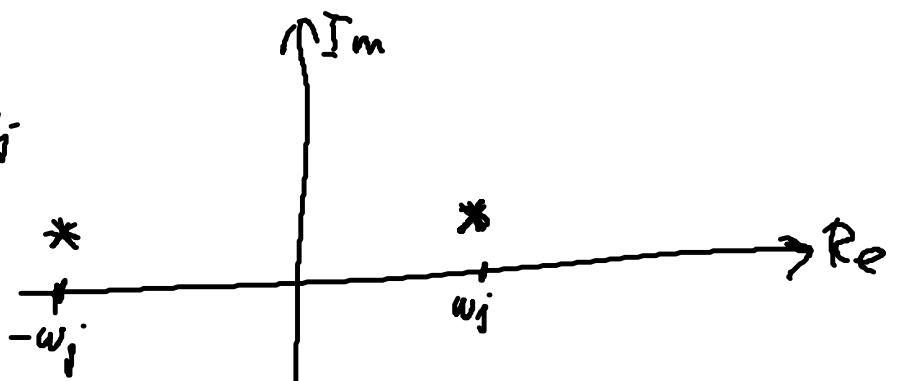
es gilt

$$|\omega f(\omega)| \xrightarrow{\omega \rightarrow \infty} 0$$

$$f(\omega) = \frac{1}{2\pi i} \int \frac{dz f(z)}{z - \omega}$$

$$f(\omega) = \int_{\text{cut}} \dots = \int_{\text{cut}} \dots + \frac{1}{2} \int_{\text{cut}} \dots$$

$$= -\mathcal{P} \int_{-\infty}^{\infty} + \frac{1}{2} f(\omega) \Rightarrow f(\omega) = -2\mathcal{P} \int_{-\infty}^{\infty} \dots$$



$$\mathcal{P} \int_0^{\infty} f(x) dx = \lim_{\epsilon \rightarrow 0} \left[\int_0^{x_0 - \epsilon} f(x) dx + \int_{x_0 + \epsilon}^{\infty} f(x) dx \right]$$

$x_0 - \epsilon$ $x_0 + \epsilon$
 x_0 Polstelle

$$0 = a_1 \exp\{i\omega_1 t\} + a_2 \exp\{i\omega_2 t\}$$

$$\Rightarrow a_1 = 0 \wedge a_2 = 0$$