

1.1 Tex Gyre Schola Lua

THEOREM 1.1—RESIDUE THEOREM

Let f be analytic in the region G except for the isolated singularities a_1, a_2, \dots, a_m . If γ is a closed rectifiable curve in G which does not pass through any of the points a_k and if $\gamma \approx 0$ in G then

$$\operatorname{Res}_{z=a} f(z) = \operatorname{Res}_a f = \frac{1}{2\pi i} \int_C f(z) dz = \frac{1}{2\pi i} \int_\gamma f = \sum_{k=1}^m n(\gamma; a_k) \operatorname{Res}(f; a_k)$$

where $C \subset D \setminus \{a\}$ is a closed line $n(C, a) = 1$ (e. g. a counterclockwise circle loop). □

Some bold math

If the radio channel is modeled as an LTV system, the observed noisy signal $\mathbf{y}(t)$ will be

$$\mathbf{y}(t) = \int_0^\infty \mathbf{H}(t, \tau) \mathbf{u}(t - \tau) d\tau + \mathbf{e}(t), \quad (1.1)$$

where t is the time when the receive antenna observes the signal, τ is the time delay in the channel, and $\mathbf{e}(t) \sim \mathcal{CN}(0, \mathbf{\Sigma})$ is additive zero mean circular symmetric complex Gaussian noise with a positive definite covariance matrix $\mathbf{\Sigma} \in \mathbb{R}^{n_x \times n_x}$. The probability density function of the distribution is given by

$$\mathcal{CN}(\mathbf{x}|\mathbf{m}, \mathbf{\Sigma}) = \frac{1}{\pi^{n_x} |\mathbf{\Sigma}|} \exp\{-\mathbf{(x - m)}^* \mathbf{\Sigma}^{-1} (\mathbf{x - m})\}, \quad (1.2)$$

where $\mathbf{m} \in \mathbb{C}^{n_x}$ denotes the mean, $\mathbf{x} \in \mathbb{C}^{n_x}$ denotes the random variable, $(\cdot)^*$ denotes Hermitian transpose, and $|\cdot|$ denotes determinant.

Verbatim and ttfont

aacceemmn

The quick **brown fox jumps** over the lazy dog. "12345"

```
\[
\mathop{\mathrm{Res}}\limits_{z=a} f(z) =
\mathop{\mathrm{Res}}\limits_a f
= \frac{1}{2\pi i} \int\limits_C f(z) \, \mathrm{d}z =
\frac{1}{2\pi i} \int_\gamma f =
\sum_{k=1}^m n(\gamma; a_k) \operatorname{Res}(f; a_k)
\]
```

Svenska

Gud hjälpe Zorns mö qvickt få byxa.