

**Lemma 11.33** Let  $\mathbf{X}$  be a **zero-mean** random vector and

$$\mathbf{Y} = \mathbf{X} + \mathbf{Z}$$

where  $\mathbf{Z}$  is independent of  $\mathbf{X}$ . Then

$$\tilde{K}_{\mathbf{Y}} = \tilde{K}_{\mathbf{X}} + \tilde{K}_{\mathbf{Z}}.$$