

Definition (Diagonal function). Define the *diagonal function* $\text{diag}_{\mathbf{P}} : \mathbf{P} \rightarrow \mathbf{P} \times \mathbf{P}$:

$$\text{diag}_{\mathbf{P}} : \mathbf{P} \rightarrow \mathbf{P} \times \mathbf{P},$$

$$p \mapsto \langle p, p \rangle.$$