Definition (Diagonal function)

Define the *diagonal function* diag_{**p**}: $\mathbf{P} \to \mathbf{P} \times \mathbf{P}$:

 $\operatorname{diag}_{\mathbf{p}}: \mathbf{P} \to \mathbf{P} \times \mathbf{P},$

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