

## Product Under Independence

## 1 Why

TODO

## 2 Result

**Proposition 1.** The expectation of the product of two independent random variables is the product of their expectations.

 ${\it Proof.}$  Let f,g be two independent random variables. We want to show

$$\mathbf{E} f g = \mathbf{E} f \mathbf{E} g.$$