

**Definition** (Product operator  $\otimes$ ). For two maps  $h_1 : \mathbf{F}_1 \rightarrow \mathcal{A}\mathbf{R}_1$  and  $h_2 : \mathbf{F}_2 \rightarrow \mathcal{A}\mathbf{R}_2$ , define

$$h_1 \otimes h_2 : (\mathbf{F}_1 \times \mathbf{F}_2) \rightarrow \mathcal{A}(\mathbf{R}_1 \times \mathbf{R}_2),$$

$$\langle f_1, f_2 \rangle \mapsto h_1(f_1) \times h_2(f_2),$$

where  $\times$  is the product of two antichains.