CHAPTER 11

Compact funcoids

Compact funcoids are defined. Attempted to prove that under certain conditions the reloid corresponding to a compact funcoid is the neighborhood of the diagonal of the product funcoid.

This is a rough partial draft. The proofs are with errors.

FiXme: The below examples also show that subatomic product does not coincide with Tychonoff product.

1. The rest

DEFINITION 2090. A funcoid f is *directly compact* iff

$$\forall \mathcal{F} \in \mathfrak{F} : (\langle f \rangle \mathcal{F} \neq \bot \Rightarrow \operatorname{Cor} \langle f \rangle \mathcal{F} \neq \bot).$$

OBVIOUS 2091. A funcoid f is directly compact iff $\forall a \in \operatorname{atoms} \operatorname{dom} f : \operatorname{Cor} \langle f \rangle a \neq \bot$.

OBVIOUS 2092. A reflexive funcoid f is directly compact iff

$$\forall \mathcal{F} \in \mathfrak{F} : (\mathcal{F} \neq \bot \Rightarrow \operatorname{Cor} \langle f \rangle \mathcal{F} \neq \bot).$$

DEFINITION 2093. A funcoid f is *reversely compact* iff f^{-1} is directly compact.

DEFINITION 2094. A funcoid is *compact* iff it is both directly compact and reversely compact.

PROPOSITION 2095. $\prod^{\mathsf{RLD}} a = \uparrow^{\mathsf{RLD}} \prod_{i \in \operatorname{dom} a} (\uparrow^{\mathsf{RLD}})^{-1} a_i$ for every indexed family a of principal filters.

PROOF. Because $\prod_{i \in \operatorname{dom} a} (\uparrow^{\mathsf{RLD}})^{-1} a_i \in \operatorname{up} \prod^{\mathsf{RLD}} a$. FiXme: More detailed proof. □

LEMMA 2096. $\prod^{\mathsf{RLD}}_{i \in \operatorname{dom} a} \operatorname{Cor} a_i = \operatorname{Cor} \prod^{\mathsf{RLD}} a$.

PROOF. $\operatorname{Cor} \prod^{\mathsf{RLD}} a = \bigsqcap \{ \uparrow^{\mathsf{RLD}} \prod A \mid A \in \operatorname{up} a \} = \uparrow^{\mathsf{RLD}} \bigcap \{ \prod A \mid A \in \operatorname{up} a \} = \uparrow^{\mathsf{RLD}} \bigcap \{ \prod A \mid A \in \mathscr{P} \prod \mathfrak{U}, \forall i \in \operatorname{dom} a : A_i \in \operatorname{up} a_i \} = \uparrow^{\mathsf{RLD}} \bigcap \{ \prod \bigcap K_i \mid K \in \mathscr{P}\mathscr{P} \prod \mathfrak{U}, \forall i \in \operatorname{dom} a : K_i \in \mathscr{P} \operatorname{up} a_i \} = \uparrow^{\mathsf{RLD}} \bigcap \{ \prod (\uparrow^{\mathsf{RLD}})^{-1} \operatorname{Cor} a_i \mid i \in \operatorname{dom} a \} = \uparrow^{\mathsf{RLD}} \prod^{\mathsf{RLD}}_{i \in \operatorname{dom} a} \operatorname{Cor} a_i$.

FiXme: Check for little errors. □

COROLLARY 2097. $\prod^{\mathsf{RLD}}_{i \in n} \langle \operatorname{CoCompl} f_i \rangle \mathcal{X}_i = \left\langle \operatorname{CoCompl} \prod^{(A)} f \right\rangle \prod^{\mathsf{RLD}} \mathcal{X}$ for every n-indexed families f of funcoids and $\mathcal{X}$ of filters on the same set (with $\operatorname{Src} f_i = \operatorname{Base}(\mathcal{X}_i)$ for every $i \in n$).