Compact funcoids

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Abstract

Compact funcoids are defined. Under certain conditions it's proved that the reloid corresponding to a compact funcoid is the neighbourdhood of the diagonal of the product funcoid.

Preface

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

In order to understand it, first read my book [2] and this draft article [1].

The rest

Definition 1. A funcoid f is *directly compact* iff

$$\forall \mathcal{F} \in \mathfrak{F}: (\langle f \rangle \mathcal{F} \neq 0 \Rightarrow \operatorname{Cor} \langle f \rangle \mathcal{F} \neq 0).$$

Obvious 2. A funcoid f is directly compact iff $\forall a \in \operatorname{atoms} \operatorname{dom} f: \operatorname{Cor} \langle f \rangle a \neq 0$.

Definition 3. A funcoid f is *reversely compact* iff f^{-1} is directly compact.

Definition 4. A funcoid is *compact* iff it is both directly compact and reversely compact.

Proposition 5. $\prod^{\mathsf{RLD}} a = \uparrow^{\mathsf{RLD}} \prod_{i \in \operatorname{dom} a} (\uparrow^{\mathsf{RLD}})^{-1} a_i$ for every indexed family a of principal filters.

Proof. Because $\prod_{i \in \operatorname{dom} a} (\uparrow^{\mathsf{RLD}})^{-1} a_i \in \operatorname{GR} \prod^{\mathsf{RLD}} a$. [TODO: More detailed proof.] □

Lemma 6. $\prod^{\mathsf{RLD}}_{i \in \operatorname{dom} a} \operatorname{Cor} a_i = \operatorname{Cor} \prod^{\mathsf{RLD}} a$.

Proof. $\operatorname{Cor} \prod^{\mathsf{RLD}} a = \prod \{ \uparrow^{\mathsf{RLD}} \prod A \mid A \in \operatorname{up} a \} = \uparrow^{\mathsf{RLD}} \bigcap \{ \prod A \mid A \in \operatorname{up} a \} = \uparrow^{\mathsf{RLD}} \bigcap \{ \prod A \mid A \in \mathscr{P} \prod \mathfrak{U}, \forall i \in \operatorname{dom} a: A_i \in \operatorname{up} a_i \} = \uparrow^{\mathsf{RLD}} \bigcap \{ \prod \bigcap K_i \mid K \in \mathscr{P} \mathscr{P} \prod \mathfrak{U}, \forall i \in \operatorname{dom} a: K_i \in \mathscr{P} \operatorname{up} a_i \} = \uparrow^{\mathsf{RLD}} \bigcap \{ \prod (\uparrow^{\mathsf{RLD}})^{-1} \operatorname{Cor} a_i \mid i \in \operatorname{dom} a \} = \uparrow^{\mathsf{RLD}} \prod^{\mathsf{RLD}}_{i \in \operatorname{dom} a} \operatorname{Cor} a_i$. [TODO: Check for little errors.] □

Corollary 7. $\prod^{\mathsf{RLD}}_{i \in n} \langle \operatorname{CoCompl} f_i \rangle \mathcal{X}_i = \left\langle \operatorname{CoCompl} \prod^{(A)} f \right\rangle \prod^{\mathsf{RLD}} \mathcal{X}$ 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 $i \in n$).