Then $g = \langle f \times f \rangle^{*} \Delta$.

Proof. From the above $\langle f \times f \rangle^{*} \Delta \sqsubseteq g \circ g^{-1} \sqsubseteq g$. [FIXME: Funcoids and reloids are confused.]

It's remainded to prove $g \sqsubseteq \langle f \times f \rangle^{*} \Delta$.

[FIXME: Possible errors.]

Suppose there is $U \in \operatorname{xyGR} \langle f \times f \rangle^{*} \Delta$ such that $U \notin \operatorname{GR} g$.

Then $\{V \setminus U \mid V \in \operatorname{GR} g\} = g \setminus U$ would be a proper filter.

Thus by reflexivity $\langle f \times f \rangle^{*} (g \setminus U) \neq 0$.

By compactness of $f \times f$, $\operatorname{Cor} \langle f \times f \rangle^{*} (g \setminus U) \neq 0$.

Suppose $\uparrow \{(x; x)\} \sqsubseteq \langle f \times f \rangle^{*} (g \setminus U)$; then $g \setminus U \not\asymp \langle f^{-1} \times f^{-1} \rangle \{(x; x)\}$; $U \sqsubset \langle f^{-1} \times f^{-1} \rangle \{(x; x)\} \sqsubseteq \langle f^{-1} \times f^{-1} \rangle \Delta$ what is impossible.

Thus there exist $x \neq y$ such that $\{(x; y)\} \sqsubseteq \operatorname{Cor} \langle f \times f \rangle^{*} (g \setminus U)$. Thus $\{(x; y)\} \sqsubseteq \langle f \times f \rangle^{*} g$.

Thus by the lemma $\{(x; y)\} \sqsubseteq \Delta$ what is impossible. So $U \in \operatorname{GR} g$.

We have $\operatorname{xyGR} \langle f \times f \rangle^{*} \Delta \subseteq \operatorname{GR} g$; $\langle f \times f \rangle^{*} \Delta \sqsupseteq g$. □

Corollary 18. Let f is a T_1-separable (the same as T_2 for symmetric transitive) compact funcoid and g is a uniform space (reflexive, symmetric, and transitive endoreloid) such that $(\mathsf{FCD}) g = f$. Then $g = \langle f \times f \rangle^{*} \Delta$.

An (incomplete) attempt to prove one more theorem follows:

Theorem 19. Let μ and ν be uniform spaces, $(\mathsf{FCD}) \mu$ be a compact funcoid. Then a map f is a continuous map from $(\mathsf{FCD}) \mu$ to $(\mathsf{FCD}) \nu$ iff f is a (uniformly) continuous map from μ to ν.

Proof. [FIXME: errors in this proof.]

We have $\mu = \langle (\mathsf{FCD}) \mu \times (\mathsf{FCD}) \mu \rangle {\uparrow}^{\mathsf{RLD}} \Delta$

$f \in \mathrm{C}_{?}((\mathsf{FCD}) \mu; (\mathsf{FCD}) \nu)$. Then

$$f \times f \in \mathrm{C}_{?}((\mathsf{FCD})(\mu \times \mu); (\mathsf{FCD})(\nu \times \nu))$$

$(f \times f) \circ (\mathsf{FCD})(\mu \times \mu) \sqsubseteq (\mathsf{FCD})(\nu \times \nu) \circ (f \times f)$

For every $V \in \operatorname{GR}(\nu \times \nu)$ we have $\langle g^{-1} \rangle V \in \langle (\mathsf{FCD})(\mu \times \mu) \rangle \{y\}$ for some y.

$\langle g^{-1} \rangle V \in \langle (\mathsf{FCD}) \mu \times (\mathsf{FCD}) \mu \rangle {\uparrow}^{\mathsf{RLD}} \Delta = \operatorname{GR} \mu$

$\langle g \rangle \langle g^{-1} \rangle V \sqsubseteq V$

We need to prove $f \in \mathrm{C}(\mu; \nu)$ that is $\forall p \in \operatorname{GR} \nu \exists q \in \operatorname{GR} \mu$: $\langle f \rangle q \sqsubseteq p$. But this follows from the above. □

Bibliography

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