Rostock. Math. Kolloq. **68**, 81 – 82 (2013)

Subject Classification (MSC)
54A05, 54B30, 54D35, 54E17

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Erratum to "Improved nearness research II" [Rostock. Math. Kolloq. 66, 87 – 102 (2011)]

KEY WORDS AND PHRASES. LEADER proximity; supertopological space; LODATO space; supernear space; superclan space; Bounded Topology.

Theorem 2.32 *states that the category CG-SN is bicoreflective in G-SN.*

But this theorem has to be replaced by the following one:

Theorem 2.32 *The category CG-SN is bireflective in G-SN.*

Proof. For a supergrill space $(X, \mathcal{B}^X, N)$ we set for each $B \in \mathcal{B}^X$:

$$N_C(B) := \{\rho \subset \underline{P}X : \{cl_n(F) : F \in \rho\} \subset \bigcup N(B)\}.$$

Then $(X, \mathcal{B}^X, N_C)$ is a conic supergrill space and $1_X : (X, \mathcal{B}^X, N) \to (X, \mathcal{B}^X, N_C)$ to be the bireflection in demand. First, we only show that N_C satisfies (sn$_7$): Let be $\{cl_{N_C}(A).A \in \mathcal{A}\} \in N_C(B)$ for $B \in \mathcal{B}^X, \mathcal{A} \subset \underline{P}X$, we have to verify $\mathcal{A} \in N_C(B)$ which means $cl_N(A) \in \bigcup N(B)$ for each $A \in \mathcal{A}$. $A \in \mathcal{A}$ implies $cl_N(cl_{N_C}(A)) \in \bigcup N(B)$ by hypothesis. We claim now that the statement $cl_{N_C} \subset cl_N(A)$ is valid. $x \in cl_{N_C}(A)$ implies $\{A\} \in N_C(\{x\})$, hence $cl_N(A) \in \bigcup N(\{x\})$. We can find $\rho \in N(\{x\})$ such that $cl_N(A) \in \rho$. Consequently $\{cl_N(A)\} \in N(\{x\})$ follows, which shows $\{A\} \in N(\{x\})$, hence $x \in cl_N(A)$ results. Altogether we get $cl_N(cl_{N_C}(A)) \subset cl_N(A)$ implying $cl_N(A) \in \bigcup N(B)$, because by hypothesis $cl_N(cl_{N_C}(A)) \in \rho_1$ for some $\rho_1 \in N(B)$. Secondly, we prove $\bigcup N_C(B) \in GRL(X)$ for each $B \in \mathcal{B}^X$. Let be given $B \in \mathcal{B}^X$, evidently $\varnothing \notin \bigcup N_C(B)$. Now, if $F_1 \in \bigcup N_C(B)$ and $F_1 \subset F_2 \subset X$, then there exists $\rho \in N_C(B)$ $F_1 \in \rho$. Consequently, $cl_N(F_1) \in \rho_1$ for some $\rho_1 \in N(B)$. By hypothesis we can find $\gamma \in N(B) \cap GRL(X)$ with $cl_N(F_1) \in \gamma$. Consequently $cl_N(F_2) \in \gamma$ follows, and $\{cl_N(F_2)\} \in N(B)$ is valid. Hence $F_2 \in \bigcup N_C(B)$ results. At last let be $F_1 \cup F_2 \in \bigcup N_C(B)$ then there exists $\rho \in N_C(B)$ with $F_1 \cup F_2 \in \rho$. By definition of N_C we get $\{cl_N(F) : F \in \rho\} \subset \bigcup N(B)$. Hence $cl_N(F_1 \cup F_2) \in \mathcal{A}$ for some

$\mathcal{A} \in N(B)$. Moreover we can choose $\gamma \in GRL(X) \cap N(B)$ with $cl_N(F_1) \cup cl_N(F_2) \in \gamma$. Consequently the statement $cl_N(F_1) \in \gamma$ or $cl_N(F_2) \in \gamma$ results. But then $cl_N(F_1) \in \bigcup N(B)$ or $cl_N(F_2) \in \bigcup N(B)$ is valid showing that $\{F_1\} \in N_C(B)$ or $\{F_2\} \in N_C(B)$, which concludes this part of proof. Evidently, $1_X : (X, \mathcal{B}^X, N) \to (X, \mathcal{B}^X, N_C)$ is sn-map. Now, let be given $(Y, \mathcal{B}^Y, M) \in Ob(CG - SN)$ and sn-map $f : (X, \mathcal{B}^X, N) \to (Y, \mathcal{B}^Y, M)$, we have to prove $f : (X, \mathcal{B}^X, N_C) \to (Y, \mathcal{B}^Y, M)$ is sn-map. For $\mathcal{B} \in B^Y$ and $\mathcal{A} \in N_C(B)$ we have to show $f\mathcal{A} \in M(f[B])$. Therefore it suffices to verify that the inclusion $f\mathcal{A} \subset \bigcup M(f[B])$ holds. For $A \in \mathcal{A}$ $cl_N(A) \in \rho$ for some $\rho \in N(B)$. Since f is sn-map we get $f\rho \in M(f[B])$. But $\{cl_M(f[A])\} << \{f[cl_N(A)]\} \in f\rho$. Consequently $\{cl_M(f[A])\} \in M(f[B])$ follows implying $\{f[A]\} \in M(f[B])$. But then $f[A] \in \bigcup M(f[B])$ results.

Definition 2.12 *explains when a given round paranear space $(X, \mathcal{B}^X, N)$ is LOproximal.*

The condition (LOp) has to be corrected as follows:

(LOp) $B \in \mathcal{B}^X \backslash \{\varnothing\}$, $\rho \subset p_N(B)$ and $\{B\} \cup \rho \subset \bigcap \{p_N(F) : F \in \rho \cap \mathcal{B}^X\}$ imply $\rho \in N(B)$, where $Bp_N A$ iff $\{A\} \in N(B)$.

References

[1] **D. Leseberg :** *Improved nearness research II.* Rostock. Math. Kolloq. **66**, 87 – 102(2011)

received: September 27, 2013

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