Remark 1. It is a **very** rough partial draft. It is meant to express a rough research idea, not to be correct, readable, or complete. First read the book:

http://www.mathematics21.org/algebraic-general-topology.html upon which this formalistic is based (especially about the definition of generalized limit).

See also http://planetmath.org/MetasingularNumbers

The idea is simple (for these who know funcoids theory). But to find exact formulations about this is notoriously difficult. Below are attempts to formulate things about the theory of singularities.

New theory

Definition 2. *Singularity level* is a transitive, T_2-separable endofuncoid.

Let ν be a singularity level. Let Δ be a filter.

Define $\mathrm{SLA}(\nu)$ as:

$\mathrm{Ob}\,\mathrm{SLA}(\nu) = \{\nu \circ f \mid f \text{ is a monovalued funcoid with domain } \Delta\}$

$X\,[\mathrm{SLA}(\nu)]^*\,Y \Leftrightarrow \exists x \in X \forall K \in \mathrm{GR}\,x \exists L \in Y: L \sqsubseteq K$ [FIXME: It is probably not a funcoid.]

Remark 3. $\mathrm{GR}\,x$ is used despite of it is a funcoid not reloid.

Proposition 4. $\mathrm{SLA}(\nu)$ is an endofuncoid.

Proof. $\neg(\emptyset\,[\mathrm{SLA}(\nu)]^*\,Y)$ and $\neg(X\,[\mathrm{SLA}(\nu)]^*\,\emptyset)$ are obvious.

$I \cup J\,[\mathrm{SLA}(\nu)]^*\,Y \Leftrightarrow I\,[\mathrm{SLA}(\nu)]^*\,Y \vee J\,[\mathrm{SLA}(\nu)]^*\,Y$ is obvious.

$X\,[\mathrm{SLA}(\nu)]^*\,I \cup J \Leftrightarrow \exists x \in X \forall K \in \mathrm{GR}\,x \exists L \in I \cup J: L \sqsubseteq K \Leftrightarrow \exists x \in X \forall K \in \mathrm{GR}\,x: (\exists L \in I: L \sqsubseteq K \vee \exists L \in J: L \sqsubseteq K)$??

?? □

Alternative definition: [FIXME: It is probably not a funcoid.]

Definition 5. $X\,[\mathrm{SLA}(\nu)]^*\,Y \Leftrightarrow \exists z \in \mathrm{Ob}\,\mu \forall K \in \mathrm{GR}\,z \exists x \in X, y \in Y: x, y \sqsubseteq K$

Proposition 6. $\mathrm{SLA}(\nu)$ is a funcoid.

Proof. $X\,[\mathrm{SLA}(\nu)]^*\,Y \Leftrightarrow \exists z \in \mathrm{Ob}\,\mu, x \in X, y \in Y \forall K \in (\mathrm{GR}\,z)^{X \times Y}: x, y \sqsubseteq K_{x,y} \Leftrightarrow$??

$I \cup J\,[\mathrm{SLA}(\nu)]^*\,Y \Leftrightarrow \exists z \in \mathrm{Ob}\,\mu \forall K \in \mathrm{GR}\,z \exists x \in I \cup J, y \in Y: x, y \sqsubseteq K \Leftrightarrow \exists z \in \mathrm{Ob}\,\mu \forall K \in \mathrm{GR}\,z: (\exists y \in Y: y \sqsubseteq K \wedge (\exists x \in I: x \sqsubseteq K \vee \exists x \in J: x \sqsubseteq K)) \Leftrightarrow \exists z \in \mathrm{Ob}\,\mu \forall K \in \mathrm{GR}\,z: ((\exists y \in Y: y \sqsubseteq K \wedge \exists x \in I: x \sqsubseteq K) \vee (\exists y \in Y: y \sqsubseteq K \wedge \exists x \in J: x \sqsubseteq K)) \Leftrightarrow$?? □

Proposition 7. $\mathrm{SLA}(\nu)$ is T_2-separable.

Proof. ?? □

Proposition 8. $\mathrm{SLA}(\nu)$ is transitive.