REMARK 1911. At http://mathoverflow.net/questions/60925/special-infinitary-relations-and-ultrafilters there is a proof for arbitrary infinite form, not just for $\mathbb{N}$.

CONJECTURE 1912. For every family $a = a_{i\in\mathbb{N}}$ of ultrafilters $\prod^{\mathsf{Strd}} a$ is not an atom nor of the poset of staroids neither of the poset of completary staroids of the form $\lambda i \in \mathbb{N} : \operatorname{Base}(a_i)$.

CONJECTURE 1913. There exists a non-completary staroid on powersets.

CONJECTURE 1914. There exists a prestaroid which is not a staroid.

CONJECTURE 1915. The set of staroids of the form A^B where A and B are sets is atomic.

CONJECTURE 1916. The set of staroids of the form A^B where A and B are sets is atomistic.

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EXAMPLE 1919. $\operatorname{StarComp}(a, f\sqcup g) \neq \operatorname{StarComp}(a, f)\sqcup\operatorname{StarComp}(a, g)$ in the category of binary relations with star-morphisms for some n-ary relation a and an n-indexed families f and g of functions.

PROOF. Let $n = \{0, 1\}$. Let $\operatorname{GR} a = \{(0, 1), (1, 0)\}$ and $f = \llbracket\{(0, 1)\}, \{(1, 0)\}\rrbracket$, $g = \llbracket\{(1, 0)\}, \{(0, 1)\}\rrbracket$.

For every $\{0, 1\}$-indexed family of μ of functions:

$$L \in \operatorname{StarComp}(a, \mu) \Leftrightarrow \exists y \in a : (y_0 \mathrel{\mu_0} L_0 \wedge y_1 \mathrel{\mu_1} L_1) \Leftrightarrow \exists y_0 \in \operatorname{dom}\mu_0, y_1 \in \operatorname{dom}\mu_1 : (y_0 \mathrel{\mu_0} L_0 \wedge y_1 \mathrel{\mu_1} L_1)$$

for every n-ary relation μ.

Consequently

$$L \in \operatorname{StarComp}(a, f) \Leftrightarrow L_0 = 1 \wedge L_1 = 0 \Leftrightarrow L = (1, 0)$$

that is $\operatorname{StarComp}(a, f) = \{(1, 0)\}$. Similarly

$\operatorname{StarComp}(a, g) = \{(0, 1)\}$.

Also

$$L \in \operatorname{StarComp}(a, f \sqcup g) \Leftrightarrow \exists y_0, y_1 \in \{0, 1\} : ((y_0 \mathrel{f_0} L_0 \vee y_0 \mathrel{g_0} L_0) \wedge (y_1 \mathrel{f_1} L_1 \vee y_1 \mathrel{g_1} L_1)).$$

Thus

$$\operatorname{StarComp}(a, f \sqcup g) = \{(0, 1), (1, 0), (0, 0), (1, 1)\}.$$

□

COROLLARY 1920. The above inequality is possible also for star-morphisms of funcoids and star-morphisms of reloids.

PROOF. Because finitary funcoids and reloids between finite sets are essentially the same as finitary relations and our proof above works for binary relations. □

The following example shows that the theorem 1861 can't be strengthened:

EXAMPLE 1921. For some multifuncoid f on powersets complete in argument k the following formula is false:

$\langle f\rangle_l(L \cup \{(k, \bigsqcup X)\}) = \bigsqcup_{x\in X}\langle f\rangle_l(L \cup \{(k, x)\})$ for every $X \in \mathscr{P}\mathfrak{Z}_k$, $L \in \prod_{i\in(\operatorname{arity} f)\setminus\{k,l\}} \mathscr{F}_i$.