Weekly Meeting

Topic: property α with $k = 6$; property β for $k = 4$

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Issues

1. `s111` stratification for property α with $k = 6$.
2. Construct property β.

Property α

$\mathrm{SOA}(n, m, 27, 3)$ has property α iff:

1. A is resolution IV.
2. (B, B', B'') is resolution III, i.e., no repeated columns.

Property β

$\mathrm{SOA}(n, m, 27, 3)$ has property β iff:

1. A is resolution IV.
2. $(B, B', B'') \subseteq \bar{A}$.
3. (B, B', B'') contains no 2fi from A.

Grouping with $k = 6$ from last week

α	β	$\alpha \cdot \beta$	$\alpha \cdot \beta^2$
$5 \cdot A$	$6 \cdot B$	$56 \cdot AB$	$56^2 \cdot AB^2$
$5 \cdot A^2$	$6 \cdot B^2$	$56 \cdot A^2B^2$	$56^2 \cdot A^2B$
$5 \cdot B$	$6 \cdot A^2$	$56 \cdot A^2B$	$56^2 \cdot AB$
$5 \cdot B^2$	$6 \cdot A$	$56 \cdot AB^2$	$56^2 \cdot A^2B^2$
$6 \cdot AB$	$5 \cdot AB^2$	$56 \cdot A^2$	$5^26 \cdot B^2$
$6 \cdot A^2B^2$	$5 \cdot A^2B$	$56 \cdot A$	$5^26 \cdot B$
$6 \cdot AB^2$	$5 \cdot A^2B^2$	$56 \cdot B$	$5^26 \cdot A^2$
$6 \cdot A^2B$	$5 \cdot AB$	$56 \cdot B^2$	$5^26 \cdot A$

Grouping with $k = 6$ from last week

One of the bad combinations: #1, #3, #23.

- #1 = 145, #3 = 245, #23 = $1^2 2^2 45$.

Grouping with $k = 4$

α	β	$\alpha \cdot \beta$	$\alpha \cdot \beta^2$
14	23	1234	$12^2 3^2 4$
$1^2 4$	$2^2 3$	$1^2 2^2 34$	$1^2 23^2 4$
24	$1^2 3$	$1^2 234$	$123^2 4$
$2^2 4$	13	$12^2 34$	$1^2 2^2 3^2 4$
123	$12^2 4$	$1^2 34$	$2^2 34^2$
$1^2 2^2 3$	$1^2 24$	134	234^2
$12^2 3$	$1^2 2^2 4$	234	$1^2 34^2$
$1^2 23$	124	$2^2 34$	134^2

Grouping with $k = 4$

$A_{(1)} = (14, 1^2 4, 24, 2^2 4)$

$A_{(2)} = (123, 1^2 2^2 3, 12^2 3, 1^2 23)$

$B_{(1)} = (23, 2^2 3, 1^2 3, 13)$

$B_{(2)} = (12^2 4, 1^2 24, 1^2 2^2 4, 124)$

Grouping with $k = 6$

α	β	$\alpha \cdot \beta$	$\alpha \cdot \beta^2$
$5 \cdot A_{(1)}$	$6 \cdot B_{(1)}$	$56 \cdot A_{(1)}B_{(1)}$	$56^2 \cdot A_{(1)}B_{(1)}^2$
$5^2 \cdot A_{(1)}$	$6^2 \cdot B_{(1)}$	$5^26^2 \cdot A_{(1)}B_{(1)}$	$5^26 \cdot A_{(1)}B_{(1)}^2$
$6 \cdot A_{(1)}$	$5^2 \cdot B_{(1)}$	$5^26 \cdot A_{(1)}B_{(1)}$	$56 \cdot A_{(1)}B_{(1)}^2$
$6^2 \cdot A_{(1)}$	$5 \cdot B_{(1)}$	$56^2 \cdot A_{(1)}B_{(1)}$	$5^26^2 \cdot A_{(1)}B_{(1)}^2$
$56 \cdot A_{(2)}$	$56^2 \cdot B_{(2)}$	$5^2 \cdot A_{(2)}B_{(2)}$	$6^2 \cdot A_{(2)}B_{(2)}^2$
$5^26^2 \cdot A_{(2)}$	$5^62 \cdot B_{(2)}$	$5 \cdot A_{(2)}B_{(2)}$	$6 \cdot A_{(2)}B_{(2)}^2$
$56^2 \cdot A_{(2)}$	$5^26^2 \cdot B_{(2)}$	$6 \cdot A_{(2)}B_{(2)}$	$5^2 \cdot A_{(2)}B_{(2)}^2$
$5^26 \cdot A_{(2)}$	$56 \cdot B_{(2)}$	$6^2 \cdot A_{(2)}B_{(2)}$	$5 \cdot A_{(2)}B_{(2)}^2$

Construct property β for $s = 2$

$P_0 =$ all combinations of $e_3, \ldots, e_k$.
$P = (I, P_0)$

$A = e_1 P$
$B = e_2 P$
$B' = e_1 e_2 P \rightarrow S = (P_0, A, B, B')$

Construct property β for $s = 3$

$P_0 =$ all combinations of $e_3, \ldots, e_k$.
$P = (I, P_0, P_0^2)$

$A = e_1 P$
$B = e_2 P$
$B' = e_1 e_2 P$
$B'' = e_1 e_2^2 P \rightarrow S = (P_0, A, B, B', B'')$