Step	Algorithm:		
1a			
4			
	where		
2			
3	while do		
2,3		٨	
5a			
	where		
6			
8			
5b			
7			
2			
	endwhile		
2,3		^ ¬()
1b			

Step	Algorithm: $[C] := \text{Syr}2\text{K_LT_BLK_VAR}3(A, B, C)$
1a	$C = \widehat{C}$
4	$A o \left(A_L \middle A_R\right), B o \left(B_L \middle B_R\right), C o \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}}\right)$
	where A_L has 0 columns, B_L has 0 columns, C_{TL} is 0×0
2	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} \right) = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix}\right) $
3	while $n(A_L) < n(A)$ do
2,3	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \wedge n(A_L) < n(A) $
5a	Determine block size b
	$\left(A_L \middle A_R\right) \rightarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \rightarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}}\right) \rightarrow$
	$\Big / C_{00} \Big C_{01} \Big C_{02} \Big angle$
	$egin{pmatrix} C_{00} & C_{01} & C_{02} \ \hline C_{10} & C_{11} & C_{12} \ \hline C_{00} & C_{01} & C_{00} \ \hline \end{pmatrix}$
	$oxed{C_{20} C_{21} C_{22}}$
	where A_1 has b columns, B_1 has b columns, C_{11} is $b \times b$
6	$\left(\begin{array}{c c} C_{00} & C_{01} & C_{02} \\ \hline C & C & C \\ \hline \end{array}\right) = \left(\begin{array}{c c} A_0^T B_0 + B_0^T A_0 + C_{00} & 0 & 0 \\ \hline P^T A_0 + \widehat{C}_0 & \widehat{C}_0 & 0 \\ \hline \end{array}\right)$
0	$\begin{pmatrix} \frac{C_{00} C_{01} C_{02}}{C_{10} C_{11} C_{12}} \\ \frac{C_{10} C_{11} C_{12}}{C_{20} C_{21} C_{22}} \end{pmatrix} = \begin{pmatrix} \frac{A_0^T B_0 + B_0^T A_0 + \widehat{C}_{00} & 0 & 0}{B_1^T A_0 + \widehat{C}_{10} & \widehat{C}_{11} & 0} \\ \frac{B_1^T A_0 + \widehat{C}_{10} & \widehat{C}_{21} \widehat{C}_{22}}{B_2^T A_0 + \widehat{C}_{20} & \widehat{C}_{21} \widehat{C}_{22}} \end{pmatrix}$
	$C_{10} := A_1^T B_0 + \widehat{C}_{10}$
8	$C_{10} := A_1^T B_0 + \widehat{C}_{10}$ $C_{11} := A_1^T B_1 + B_1^T A_1 + \widehat{C}_{11}$
	$C_{21} := B_2^T A_1 + \widehat{C}_{21}$
5b	$\left(A_L \middle A_R\right) \leftarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \leftarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}}\right) \leftarrow$
	$\int C_{00} C_{01} C_{02}$
	$oxed{C_{10}C_{11}C_{12}}$
	$egin{pmatrix} C_{00} & C_{01} & C_{02} \ \hline C_{10} & C_{11} & C_{12} \ \hline C_{20} & C_{21} & C_{22} \end{pmatrix}$
	$ \begin{pmatrix} C_{00} & C_{01} & C_{02} \\ C_{10} & C_{11} & C_{12} \\ C_{20} & C_{21} & C_{22} \end{pmatrix} = \begin{pmatrix} A_0^T B_0 + B_0^T A_0 + \hat{C}_{00} & 0 & 0 \\ B_1^T A_0 + A_1^T B_0 + \hat{C}_{10} & A_1^T B_1 + B_1^T A_1 + \hat{C}_{11} & 0 \\ B_2^T A_0 + \hat{C}_{20} & B_2^T A_1 + \hat{C}_{21} & \hat{C}_{22} \end{pmatrix} $
7	
	$C_{20} C_{21} C_{22}$ $B_2^T A_0 + \hat{C}_{20}$ $B_2^T A_1 + \hat{C}_{21}$ \hat{C}_{22}
2	$\left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix}\right)$
	endwhile
2,3	$\left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} C_{BR}\right) = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \right) \land \neg (n(A_L) < n(A))$
1b	$[C] = \operatorname{Syr}2k_{-}\operatorname{lt}(A, B, \widehat{C})$

Algorithm: $[C] := \text{Syr2k_LT_BLK_VAr3}(A, B, C)$

$$A \to \left(A_L \middle| A_R\right), B \to \left(B_L \middle| B_R\right), C \to \left(\frac{C_{TL}}{C_{BL}}\middle| C_{BR}\right)$$

where A_L has 0 columns, B_L has 0 columns, C_{TL} is 0×0

while $n(A_L) < n(A)$ do

Determine block size b

$$\left(A_{L} \middle| A_{R} \right) \to \left(A_{0} \middle| A_{1} \middle| A_{2} \right) , \left(B_{L} \middle| B_{R} \right) \to \left(B_{0} \middle| B_{1} \middle| B_{2} \right) , \left(\frac{C_{TL} \middle| C_{TR}}{C_{BL} \middle| C_{BR}} \right) \to \left(\frac{C_{00} \middle| C_{01} \middle| C_{02}}{C_{10} \middle| C_{11} \middle| C_{12}} \right)$$

where A_1 has b columns, B_1 has b columns, C_{11} is $b \times b$

$$C_{10} := A_1^T B_0 + \widehat{C}_{10}$$

$$C_{11} := A_1^T B_1 + B_1^T A_1 + \widehat{C}_{11}$$

$$C_{21} := B_2^T A_1 + \widehat{C}_{21}$$

$$\left(A_{L} \middle| A_{R} \right) \leftarrow \left(A_{0} \middle| A_{1} \middle| A_{2} \right), \left(B_{L} \middle| B_{R} \right) \leftarrow \left(B_{0} \middle| B_{1} \middle| B_{2} \right), \left(\frac{C_{TL} \middle| C_{TR}}{C_{BL} \middle| C_{BR}} \right) \leftarrow \left(\frac{C_{00} \middle| C_{01} \middle| C_{02}}{C_{10} \middle| C_{11} \middle| C_{12}} \right)$$

endwhile

Step	Algorithm: $[C] := Syr2k_Lt_Blk_Var3(A, B, C)$
1a	$C = \hat{C}$
4	where
2	where
3	while do
2,3	^
5a	Determine block size
	where
6	
8	
O	
5b	
7	
2	
	endwhile
2,3	∧¬()
1b	$[C] = \operatorname{Syr}2k_{-}\operatorname{lt}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{Syr}2\text{K_LT_BLK_VAR}3(A, B, C)$
1a	$C = \hat{C}$
4	
2	where $ \left(\frac{C_{TL} C_{TR}}{C_{BL} C_{BR}}\right) = \left(\frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL} \hat{C}_{TR}}{B_R^T A_L + \hat{C}_{BL} \hat{C}_{BR}}\right) $
3	while do
2,3	$egin{pmatrix} \left(rac{C_{TL}}{C_{BL}} \left C_{TR} ight) = \left(rac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \left \widehat{C}_{BR} ight) \wedge \end{pmatrix}$
5a	Determine block size
	where
6	
8	
5b	
7	
2	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix}\right) $
	endwhile
2	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} = \left(\frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL}}{B_R^T A_L + \hat{C}_{BL}} \begin{vmatrix} \hat{C}_{TR} \\ \hat{C}_{BR} \end{vmatrix} \right) \land \neg () $
1b	$[C] = \operatorname{Syr}2k \operatorname{lt}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{Syr}2\text{K_LT_BLK_VAR}3(A, B, C)$
1a	$C = \hat{C}$
4	
2	where $ \left(\frac{C_{TL} C_{TR}}{C_{BL} C_{BR}}\right) = \left(\frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL} \hat{C}_{TR}}{B_R^T A_L + \hat{C}_{BL} \hat{C}_{BR}}\right) $
3	while $n(A_L) < n(A)$ do
2,3	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \right) \wedge n(A_L) < n(A) $
5a	Determine block size
	where
6	
8	
5b	
7	
2	$ \left(\frac{C_{TL} C_{TR}}{C_{BL} C_{BR}}\right) = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL} \widehat{C}_{TR}}{B_R^T A_L + \widehat{C}_{BL} \widehat{C}_{BR}}\right) $
	endwhile
2,3	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} \right) = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \right) \land \neg (n(A_L) < n(A)) $
1b	$[C] = \operatorname{Syr}2k \operatorname{lt}(A, B, \widehat{C})$

1a $C = \hat{C}$ 4 $A \rightarrow (A_L A_R)$, $B \rightarrow (B_L B_R)$, $C \rightarrow \begin{pmatrix} C_{TL} C_{TR} \\ C_{DL} C_{DR} \end{pmatrix}$ where A_L has 0 columns, B_L has 0 columns, C_{TL} is 0×0 2 $\begin{pmatrix} C_{TL} C_{TR} \\ C_{BL} C_{BR} \end{pmatrix} = \begin{pmatrix} A_L^T B_L + B_L^T A_L + \hat{C}_{TL} \hat{C}_{TR} \\ B_L^T A_L + \hat{C}_{BL} \hat{C}_{BR} \end{pmatrix}$ 3 while $n(A_L) < n(A)$ do 2,3 $\begin{pmatrix} C_{TL} C_{TR} \\ C_{BL} C_{BR} \end{pmatrix} = \begin{pmatrix} A_L^T B_L + B_L^T A_L + \hat{C}_{TL} \hat{C}_{TR} \\ B_L^T A_L + \hat{C}_{BL} \hat{C}_{BR} \end{pmatrix} \wedge n(A_L) < n(A)$ 5a Determine block size where 6 8 5b 7 2 $\begin{pmatrix} C_{TL} C_{TR} \\ C_{BL} C_{BR} \end{pmatrix} = \begin{pmatrix} A_L^T B_L + B_L^T A_L + \hat{C}_{TL} \hat{C}_{TR} \\ B_L^T A_L + \hat{C}_{BL} \hat{C}_{BR} \end{pmatrix}$ endwhile 2,3 $\begin{pmatrix} C_{TL} C_{TR} \\ C_{BL} C_{BR} \end{pmatrix} = \begin{pmatrix} A_L^T B_L + B_L^T A_L + \hat{C}_{TL} \hat{C}_{TR} \\ B_R^T A_L + \hat{C}_{BL} \hat{C}_{BR} \end{pmatrix} \wedge n(A_L) < n(A)$ 1b $ C = \text{Syr2k.lt}(A, B, \hat{C})$	Step	Algorithm: $[C] := \text{Syr}2\text{K_LT_BLK_VAR}3(A, B, C)$
$ \begin{array}{c c} & \text{where} & A_L \text{ has 0 columns, } B_L \text{ has 0 columns, } C_{TL} \text{ is 0} \times 0 \\ \hline 2 & \begin{pmatrix} C_{TL} & C_{TR} \\ C_{BL} & C_{BR} \end{pmatrix} = \begin{pmatrix} A_L^T B_L + B_L^T A_L + \hat{C}_{TL} & \hat{C}_{TR} \\ B_R^T A_L + \hat{C}_{BL} & \hat{C}_{BR} \end{pmatrix} \\ \hline 3 & \text{while } n(A_L) < n(A) \text{ do} \\ \hline 2.3 & \begin{pmatrix} C_{TL} & C_{TR} \\ C_{BL} & C_{BR} \end{pmatrix} = \begin{pmatrix} A_L^T B_L + B_L^T A_L + \hat{C}_{TL} & \hat{C}_{TR} \\ B_R^T A_L + \hat{C}_{BL} & \hat{C}_{BR} \end{pmatrix} \wedge n(A_L) < n(A) \\ \hline 5a & \textbf{Determine block size} \\ \hline \\ 8 & \\ \hline 5b & \\ \hline 7 & \\ \hline 2 & \begin{pmatrix} C_{TL} & C_{TR} \\ C_{BL} & C_{BR} \end{pmatrix} = \begin{pmatrix} A_L^T B_L + B_L^T A_L + \hat{C}_{TL} & \hat{C}_{TR} \\ B_R^T A_L + \hat{C}_{BL} & \hat{C}_{BR} \end{pmatrix} \\ \hline \\ 6 & \\ \hline 8 & \\ \hline 5 & \\ \hline 2 & \\ \hline \\ 2 & \\ \hline \\ 3 & \begin{pmatrix} C_{TL} & C_{TR} \\ C_{BL} & C_{BR} \\ C_{BL} & C_{BR} \end{pmatrix} = \begin{pmatrix} A_L^T B_L + B_L^T A_L + \hat{C}_{TL} & \hat{C}_{TR} \\ B_R^T A_L + \hat{C}_{BL} & \hat{C}_{BR} \\ \hline \\ B_R^T A_L + \hat{C}_{BL} & \hat{C}_{BR} \end{pmatrix} \wedge \neg (n(A_L) < n(A)) \\ \hline \\ B_R^T A_L + \hat{C}_{BL} & \hat{C}_{BR} \end{pmatrix} \wedge \neg (n(A_L) < n(A)) \\ \hline \\ B_R^T A_L + \hat{C}_{BL} & \hat{C}_{BR} \end{pmatrix} $	1a	$C = \widehat{C}$
$ \begin{array}{c c} 2 & \left(\frac{C_{TL}}{C_{BL}} C_{TR}}{C_{BL}} \right) = \left(\frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL}}{B_R^T A_L + \hat{C}_{BL}} \hat{C}_{TR}}{B_R^T A_L + \hat{C}_{BL}} \hat{C}_{DR} \right) \\ 3 & \text{while } n(A_L) < n(A) \text{ do} \\ \\ 2,3 & \left(\frac{C_{TL}}{C_{DL}} C_{TR}}{C_{DL}} \right) = \left(\frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL}}{B_R^T A_L + \hat{C}_{BL}} \hat{C}_{DR} \right) \wedge n(A_L) < n(A) \\ 5a & \text{Determine block size} \\ \\ 8 & \\ 5b & \\ 7 & \\ 2 & \left(\frac{C_{TL}}{C_{TR}} C_{TR}}{C_{BL}} \right) = \left(\frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL}}{B_R^T A_L + \hat{C}_{BL}} \hat{C}_{TR} \right) \\ & \\ 6 & \\ 8 & \\ 5b & \\ 7 & \\ 2 & \left(\frac{C_{TL}}{C_{TR}} C_{TR} \right) = \left(\frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL}}{B_R^T A_L + \hat{C}_{BL}} \hat{C}_{BR} \right) \\ & \\ endwhile & \\ 2,3 & \left(\frac{C_{TL}}{C_{DL}} C_{TR} \right) = \left(\frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL}}{B_R^T A_L + \hat{C}_{BL}} \hat{C}_{BR} \right) \wedge \neg (n(A_L) < n(A)) \\ & \\ & \\ B_R^T A_L + \hat{C}_{BL}} \hat{C}_{BR} \right) \wedge \neg (n(A_L) < n(A)) \\ & \\ \end{array} $	4	$A o \left(A_L \middle A_R\right), B o \left(B_L \middle B_R\right), C o \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}}\right)$
3 while $n(A_L) < n(A)$ do 2.3 $ \left(\frac{C_{TL}C_{TR}}{C_{BL}C_{BR}} \right) = \left(\frac{A_L^TB_L + B_L^TA_L + \hat{C}_{TL}}{B_R^TA_L + \hat{C}_{BL}} \right) \hat{C}_{BR} $ 5a Determine block size where 6 8 5b 7 2 $ \left(\frac{C_{TL}C_{TR}}{C_{BL}C_{BR}} \right) = \left(\frac{A_L^TB_L + B_L^TA_L + \hat{C}_{TL}}{B_R^TA_L + \hat{C}_{TL}} \right) \hat{C}_{TR} \hat{C}_{TR} $ endwhile 2.3 $ \left(\frac{C_{TL}C_{TR}}{C_{BL}C_{BR}} \right) = \left(\frac{A_L^TB_L + B_L^TA_L + \hat{C}_{TL}}{B_R^TA_L + \hat{C}_{BL}} \right) \hat{C}_{BR} \hat{C}_{BR} $ endwhile		where A_L has 0 columns, B_L has 0 columns, C_{TL} is 0×0
	2	$\left(\frac{CTL}{C_{BL}} \frac{CTR}{C_{BR}}\right) = \left(\frac{A_L B_L + B_L A_L + CTL}{B_R^T A_L + \hat{C}_{BL}} \frac{CTR}{\hat{C}_{BR}}\right)$
Determine block size where $\begin{bmatrix} C_{TL} & C_{TR} \\ C_{BL} & C_{TR} \end{bmatrix} = \begin{bmatrix} A_L^T B_L + B_L^T A_L + \hat{C}_{TL} \\ B_R^T A_L + \hat{C}_{BL} & \hat{C}_{BR} \end{bmatrix}$ endwhile $\begin{bmatrix} C_{TL} & C_{TR} \\ C_{BL} & C_{BR} \end{bmatrix} = \begin{bmatrix} A_L^T B_L + B_L^T A_L + \hat{C}_{TL} & \hat{C}_{TR} \\ B_R^T A_L + \hat{C}_{BL} & \hat{C}_{BR} \end{bmatrix} \wedge \neg (n(A_L) < n(A))$	3	while $n(A_L) < n(A)$ do
where $ \begin{array}{cccccccccccccccccccccccccccccccccc$	2,3	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \right) \wedge n(A_L) < n(A) $
	5a	Determine block size
		and one
		wnere
	6	
5b $ \begin{array}{cccccccccccccccccccccccccccccccccc$		
5b $ \begin{array}{cccccccccccccccccccccccccccccccccc$		
5b $ \begin{array}{cccccccccccccccccccccccccccccccccc$	8	
$ \begin{array}{cccc} 7 & & & & & & \\ 2 & & & & & & & & \\ \hline 2 & & & & & & & \\ \hline 2 & & & & & & \\ \hline C_{TL} & C_{TR} \\ C_{BL} & C_{BR} \end{array} = \begin{pmatrix} A_L^T B_L + B_L^T A_L + \hat{C}_{TL} & \hat{C}_{TR} \\ B_R^T A_L + \hat{C}_{BL} & \hat{C}_{BR} \end{pmatrix} \\ & & & & & & \\ \hline 2,3 & & & & & \\ \hline C_{TL} & C_{TR} \\ C_{BL} & C_{BR} \end{pmatrix} = \begin{pmatrix} A_L^T B_L + B_L^T A_L + \hat{C}_{TL} & \hat{C}_{TR} \\ B_R^T A_L + \hat{C}_{BL} & \hat{C}_{BR} \end{pmatrix} \land \neg (n(A_L) < n(A)) $		
$ \begin{array}{cccc} 7 & & & & & & \\ 2 & & & & & & & & \\ \hline 2 & & & & & & & \\ \hline 2 & & & & & & \\ \hline C_{TL} & C_{TR} \\ C_{BL} & C_{BR} \end{array} = \begin{pmatrix} A_L^T B_L + B_L^T A_L + \hat{C}_{TL} & \hat{C}_{TR} \\ B_R^T A_L + \hat{C}_{BL} & \hat{C}_{BR} \end{pmatrix} \\ & & & & & & \\ \hline 2,3 & & & & & \\ \hline C_{TL} & C_{TR} \\ C_{BL} & C_{BR} \end{pmatrix} = \begin{pmatrix} A_L^T B_L + B_L^T A_L + \hat{C}_{TL} & \hat{C}_{TR} \\ B_R^T A_L + \hat{C}_{BL} & \hat{C}_{BR} \end{pmatrix} \land \neg (n(A_L) < n(A)) $		
$ \begin{array}{cccc} 7 & & & & & & \\ 2 & & & & & & & & \\ \hline 2 & & & & & & & \\ \hline 2 & & & & & & \\ \hline C_{TL} & C_{TR} \\ C_{BL} & C_{BR} \end{array} = \begin{pmatrix} A_L^T B_L + B_L^T A_L + \hat{C}_{TL} & \hat{C}_{TR} \\ B_R^T A_L + \hat{C}_{BL} & \hat{C}_{BR} \end{pmatrix} \\ & & & & & & \\ \hline 2,3 & & & & & \\ \hline C_{TL} & C_{TR} \\ C_{BL} & C_{BR} \end{pmatrix} = \begin{pmatrix} A_L^T B_L + B_L^T A_L + \hat{C}_{TL} & \hat{C}_{TR} \\ B_R^T A_L + \hat{C}_{BL} & \hat{C}_{BR} \end{pmatrix} \land \neg (n(A_L) < n(A)) $	5b	
$ \frac{C_{TL} C_{TR}}{C_{BL} C_{BR}} = \frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL} \hat{C}_{TR}}{B_R^T A_L + \hat{C}_{BL} \hat{C}_{BR}} $ endwhile $ 2,3 \left(\frac{C_{TL} C_{TR}}{C_{BL} C_{BR}}\right) = \frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL} \hat{C}_{TR}}{B_R^T A_L + \hat{C}_{BL} \hat{C}_{BR}} \wedge \neg (n(A_L) < n(A)) $		
$ \frac{C_{TL} C_{TR}}{C_{BL} C_{BR}} = \frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL} \hat{C}_{TR}}{B_R^T A_L + \hat{C}_{BL} \hat{C}_{BR}} $ endwhile $ 2,3 \left(\frac{C_{TL} C_{TR}}{C_{BL} C_{BR}}\right) = \frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL} \hat{C}_{TR}}{B_R^T A_L + \hat{C}_{BL} \hat{C}_{BR}} \wedge \neg (n(A_L) < n(A)) $		
$ \frac{C_{TL} C_{TR}}{C_{BL} C_{BR}} = \frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL} \hat{C}_{TR}}{B_R^T A_L + \hat{C}_{BL} \hat{C}_{BR}} $ endwhile $ 2,3 \left(\frac{C_{TL} C_{TR}}{C_{BL} C_{BR}}\right) = \frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL} \hat{C}_{TR}}{B_R^T A_L + \hat{C}_{BL} \hat{C}_{BR}} \wedge \neg (n(A_L) < n(A)) $	7	
endwhile $2,3 \left(\frac{C_{TL} \mid C_{TR}}{C_{BL} \mid C_{BR}}\right) = \left(\frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL} \mid \hat{C}_{TR}}{B_R^T A_L + \hat{C}_{BL} \mid \hat{C}_{BR}}\right) \land \neg (n(A_L) < n(A))$	•	
endwhile $2,3 \left(\frac{C_{TL} \mid C_{TR}}{C_{BL} \mid C_{BR}}\right) = \left(\frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL} \mid \hat{C}_{TR}}{B_R^T A_L + \hat{C}_{BL} \mid \hat{C}_{BR}}\right) \land \neg (n(A_L) < n(A))$		$\begin{pmatrix} C_{TZ} & C_{TZ} \end{pmatrix} = \begin{pmatrix} A^T B_z + B^T A_{-+} & \hat{C}_{} & \hat{C}_{} \end{pmatrix}$
$2,3 \left(\frac{C_{TL} \mid C_{TR}}{C_{BL} \mid C_{BR}}\right) = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL} \mid \widehat{C}_{TR}}{B_R^T A_L + \widehat{C}_{BL} \mid \widehat{C}_{BR}}\right) \land \neg (n(A_L) < n(A))$	2	$ \left(\frac{C_{TL} C_{TR}}{C_{BL} C_{BR}}\right) = \left(\frac{A_L D_L + D_L A_L + C_{TL} C_{TR}}{B_R^T A_L + \hat{C}_{BL}}\right) $
, , , , , , , , , , , , , , , , , , ,		endwhile
, , , , , , , , , , , , , , , , , , ,	2,3	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \right) \land \neg (n(A_L) < n(A)) $
	1b	· · · · · · · · · · · · · · · · · · ·

Step	Algorithm: $[C] := \text{Syr}2\text{K_Ltt_Blk_var}3(A, B, C)$
1a	$C = \widehat{C}$
4	$A o \left(A_L \middle A_R\right), B o \left(B_L \middle B_R\right), C o \left(\frac{C_{TL}}{C_{BL}} \middle C_{BR}\right)$
2	where A_L has 0 columns, B_L has 0 columns, C_{TL} is 0×0 $ \left(\frac{C_{TL} C_{TR}}{C_{BL} C_{BR}}\right) = \left(\frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL}}{B_R^T A_L + \hat{C}_{BL}} \hat{C}_{BR}\right) $
3	while $n(A_L) < n(A)$ do
2,3	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \wedge n(A_L) < n(A) $
5a	Determine block size b
	$\left(A_L \middle A_R\right) \rightarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \rightarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL}}{C_{BL}} \middle C_{BR}\right) \rightarrow$
	$ \begin{pmatrix} C_{00} & C_{01} & C_{02} \\ C_{10} & C_{11} & C_{12} \\ C_{20} & C_{21} & C_{22} \end{pmatrix} $ where A_1 has b columns, B_1 has b columns, C_{11} is $b \times b$
6	
8	
5b	$ \left(A_{L} \middle A_{R} \right) \leftarrow \left(A_{0} \middle A_{1} \middle A_{2} \right) , \left(B_{L} \middle B_{R} \right) \leftarrow \left(B_{0} \middle B_{1} \middle B_{2} \right) , \left(\frac{C_{TL}}{C_{BL}} \middle C_{TR} \right) \leftarrow \left(\frac{C_{00} \middle C_{01} \middle C_{02}}{C_{10} \middle C_{11} \middle C_{12}} \right) $
7	
2	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} = \left(\frac{A_L^T B_L + B_L^T A_L + \hat{C}_{TL}}{B_R^T A_L + \hat{C}_{BL}} \begin{vmatrix} \hat{C}_{TR} \\ \hat{C}_{BR} \end{vmatrix}\right) $
	endwhile
2,3	$ \left(\frac{C_{TL} C_{TR}}{C_{BL} C_{BR}}\right) = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL} \widehat{C}_{TR}}{B_R^T A_L + \widehat{C}_{BL} \widehat{C}_{BR}}\right) \wedge \neg (n(A_L) < n(A)) $
1b	$[C] = \operatorname{Syr}2k_{-}\operatorname{lt}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{Syr}2\text{K_LT_BLK_VAR}3(A, B, C)$
1a	$C = \widehat{C}$
4	$A \to \left(A_L \middle A_R \right), B \to \left(B_L \middle B_R \right), C \to \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}} \right)$
	where A_L has 0 columns, B_L has 0 columns, C_{TL} is 0×0
2	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} C_{BR}\right) = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix}\right) $
3	while $n(A_L) < n(A)$ do
2,3	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \wedge n(A_L) < n(A) $
5a	Determine block size b
	$\left(A_L \middle A_R\right) \rightarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \rightarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}}\right) \rightarrow$
	$egin{pmatrix} C_{00} & C_{01} & C_{02} \ \hline C_{10} & C_{11} & C_{12} \ \hline C_{20} & C_{21} & C_{22} \end{pmatrix}$
	where A_1 has b columns, B_1 has b columns, C_{11} is $b \times b$ $\begin{pmatrix} C & C & A^T B & B^T A & \widehat{C} & 0 & 0 \end{pmatrix}$
6	$\begin{pmatrix} C_{00} & C_{01} & C_{02} \\ \hline C_{10} & C_{11} & C_{12} \\ \hline C_{20} & C_{21} & C_{22} \end{pmatrix} = \begin{pmatrix} A_0^T B_0 + B_0^T A_0 + \widehat{C}_{00} & 0 & 0 \\ \hline B_1^T A_0 + \widehat{C}_{10} & \widehat{C}_{11} & 0 \\ \hline B_2^T A_0 + \widehat{C}_{20} & \widehat{C}_{21} \widehat{C}_{22} \end{pmatrix}$
8	
5b	$\left(A_L \middle A_R\right) \leftarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \leftarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}}\right) \leftarrow$
	$\langle C_{BL} C_{BR} \rangle$
	$\left(\begin{array}{c c} C_{00} C_{01} C_{02} \\ \hline C_{01} C_{02} \end{array} \right)$
	$egin{pmatrix} C_{00} & C_{01} & C_{02} \ \hline C_{10} & C_{11} & C_{12} \ \hline C_{20} & C_{21} & C_{22} \end{pmatrix}$
	$(C_{20} C_{21} C_{22})$
7	
1	
	$\begin{pmatrix} C_{-1} & C_{-2} \end{pmatrix} = \begin{pmatrix} A^T B_{-1} + B^T A_{-1} + \widehat{C}_{-1} & \widehat{C}_{-1} \end{pmatrix}$
2	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix}\right) $
	endwhile
2,3	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \right) \land \neg (n(A_L) < n(A)) $
1b	$[C] = \operatorname{Syr}2k \operatorname{lt}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{Syr}2\text{K_LT_BLK_VAR}3(A, B, C)$
1a	$C = \widehat{C}$
4	$A \to \left(A_L \middle A_R\right), B \to \left(B_L \middle B_R\right), C \to \left(\frac{C_{TL}}{C_{BL}}\middle C_{BR}\right)$
	where A_L has 0 columns, B_L has 0 columns, C_{TL} is 0×0
2	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} C_{BR}\right) = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix}\right) $
3	while $n(A_L) < n(A)$ do
2,3	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \wedge n(A_L) < n(A) $
5a	Determine block size b
	$\left(A_L \middle A_R\right) \rightarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \rightarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}}\right) \rightarrow$
	$egin{pmatrix} C_{00} & C_{01} & C_{02} \ \hline C_{10} & C_{11} & C_{12} \ \hline C_{20} & C_{21} & C_{22} \end{pmatrix}$
	$oxed{C_{10} C_{11} C_{12}}$
	\ -° /
	where A_1 has b columns, B_1 has b columns, C_{11} is $b \times b$ $\begin{pmatrix} C_{00} & C_{01} & C_{02} \end{pmatrix} \qquad \begin{pmatrix} A_0^T B_0 + B_0^T A_0 + \widehat{C}_{00} & 0 & 0 \end{pmatrix}$
6	$\left \frac{C_{10} C_{11} C_{12}}{C_{10} C_{11} C_{12}} \right = \left \frac{0.00 + 0.00 + 0.00 + 0.00}{B_1^T A_0 + \hat{C}_{10}} \right $
	$\begin{pmatrix} C_{00} & C_{01} & C_{02} \\ \hline C_{10} & C_{11} & C_{12} \\ \hline C_{20} & C_{21} & C_{22} \end{pmatrix} = \begin{pmatrix} A_0^T B_0 + B_0^T A_0 + \widehat{C}_{00} & 0 & 0 \\ \hline B_1^T A_0 + \widehat{C}_{10} & \widehat{C}_{11} & 0 \\ \hline B_2^T A_0 + \widehat{C}_{20} & \widehat{C}_{21} \widehat{C}_{22} \end{pmatrix}$
8	
5b	$\left(A_L \middle A_R\right) \leftarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \leftarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL}}{C_{BL}} \middle C_{BR}\right) \leftarrow$
	$\int C_{00} C_{01} C_{02}$
	$oxed{C_{10} C_{11} C_{12}}$
	$egin{pmatrix} C_{00} & C_{01} & C_{02} \ \hline C_{10} & C_{11} & C_{12} \ \hline C_{20} & C_{21} & C_{22} \end{pmatrix}$
	$ \begin{pmatrix} C_{00} & C_{01} & C_{02} \\ C_{10} & C_{11} & C_{12} \\ C_{20} & C_{21} & C_{22} \end{pmatrix} = \begin{pmatrix} A_0^T B_0 + B_0^T A_0 + \widehat{C}_{00} & 0 & 0 \\ B_1^T A_0 + A_1^T B_0 + \widehat{C}_{10} & A_1^T B_1 + B_1^T A_1 + \widehat{C}_{11} & 0 \\ B_2^T A_0 + \widehat{C}_{20} & B_2^T A_1 + \widehat{C}_{21} & \widehat{C}_{22} \end{pmatrix} $
7	
	$C_{20} C_{21} C_{22}$ $B_2^T A_0 + \widehat{C}_{20}$ $B_2^T A_1 + \widehat{C}_{21}$ \widehat{C}_{22}
2	$egin{pmatrix} \left(rac{C_{TL}}{C_{BL}} \left C_{TR} ight) = \left(rac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \left \widehat{C}_{BR} ight) \end{pmatrix}$
	endwhile
2	$\left(C_{TL}\middle C_{TR}\right) = \left(A_L^TB_L + B_L^TA_L + \widehat{C}_{TL}\middle \widehat{C}_{TR}\right)$
2	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} \right) = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \right) \land \neg (n(A_L) < n(A)) $
1b	$[C] = \operatorname{Syr}2k \operatorname{lt}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{Syr2k_lt_blk_var3}(A, B, C)$
1a	$C = \widehat{C}$
4	$A o \left(A_L \middle A_R\right) , B o \left(B_L \middle B_R\right) , C o \left(\frac{C_{TL}}{C_{BL}} \middle C_{BR}\right)$
	where A_L has 0 columns, B_L has 0 columns, C_{TL} is 0×0
2	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} \right) = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix}\right) $
3	while $n(A_L) < n(A)$ do
2,3	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \wedge n(A_L) < n(A) $
5a	Determine block size b
	$\left(A_L \middle A_R\right) \rightarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \rightarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL}}{C_{BL}} \middle C_{BR}\right) \rightarrow$
	$\Big(C_{00} \Big C_{01} \Big C_{02} \Big)$
	$egin{pmatrix} C_{00} & C_{01} & C_{02} \ \hline C_{10} & C_{11} & C_{12} \ \hline C_{00} & C_{01} & C_{02} \ \hline \end{pmatrix}$
	$\left(\begin{array}{c c}C_{20}&C_{21}&C_{22}\end{array}\right)$
	where A_1 has b columns, B_1 has b columns, C_{11} is $b \times b$
6	$\left(\frac{C_{00} C_{01} C_{02}}{C_{10} C_{10} } \right) = \left(\frac{A_0 D_0 + D_0 A_0 + C_{00} 0 }{R^T A_0 + \widehat{C}_{10} } \right)$
	$\begin{pmatrix} C_{00} & C_{01} & C_{02} \\ \hline C_{10} & C_{11} & C_{12} \\ \hline C_{20} & C_{21} & C_{22} \end{pmatrix} = \begin{pmatrix} A_0^T B_0 + B_0^T A_0 + \widehat{C}_{00} & 0 & 0 \\ \hline B_1^T A_0 + \widehat{C}_{10} & \widehat{C}_{11} & 0 \\ \hline B_2^T A_0 + \widehat{C}_{20} & \widehat{C}_{21} \widehat{C}_{22} \end{pmatrix}$
	$C_{10} := A_1^T B_0 + \widehat{C}_{10}$
8	$C_{11} := A_1^T B_1 + B_1^T A_1 + \widehat{C}_{11}$
	$C_{21} := B_2^T A_1 + \widehat{C}_{21}$
5b	$\left(A_L \middle A_R\right) \leftarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \leftarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL}}{C_{BL}} \middle C_{BR}\right) \leftarrow$
	$\int C_{00} \left C_{01} \left C_{02} ight. ight.$
	$egin{pmatrix} C_{00} & C_{01} & C_{02} \ \hline C_{10} & C_{11} & C_{12} \ \hline C_{20} & C_{21} & C_{22} \end{pmatrix}$
	$igg C_{20} C_{21} C_{22} igg $
	$ \begin{pmatrix} C_{00} & C_{01} & C_{02} \\ C_{10} & C_{11} & C_{12} \\ C_{20} & C_{21} & C_{22} \end{pmatrix} = \begin{pmatrix} A_0^T B_0 + B_0^T A_0 + \hat{C}_{00} & 0 & 0 \\ B_1^T A_0 + A_1^T B_0 + \hat{C}_{10} & A_1^T B_1 + B_1^T A_1 + \hat{C}_{11} & 0 \\ B_2^T A_0 + \hat{C}_{20} & B_2^T A_1 + \hat{C}_{21} & \hat{C}_{22} \end{pmatrix} $
7	$ \left \begin{array}{c c} C_{10} C_{11} C_{12} \\ \hline \end{array} \right = \left \begin{array}{c c} B_1^T A_0 + A_1^T B_0 + C_{10} A_1^T B_1 + B_1^T A_1 + C_{11} 0 \\ \hline \end{array} \right $
	$C_{20} C_{21} C_{22}$ $B_2^T A_0 + C_{20}$ $B_2^T A_1 + C_{21}$ C_{22}
2	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix}\right) $
	endwhile
2,3	$ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} \right) = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{B_R^T A_L + \widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \right) \land \neg (n(A_L) < n(A)) $
1b	$[C] = \operatorname{Syr}2k \operatorname{lt}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{Syr}2\text{K_Ltt_Blk_var}3(A, B, C)$
	$A \to (A_L A_R)$, $B \to (B_L B_R)$, $C \to \left(\frac{C_{TL} C_{TR}}{C_{BL} C_{BR}}\right)$ where A_L has 0 columns, B_L has 0 columns, C_{TL} is 0×0
	while $n(A_L) < n(A)$ do
	Determine block size b $ \begin{pmatrix} A_L A_R \end{pmatrix} \rightarrow \begin{pmatrix} A_0 A_1 A_2 \end{pmatrix}, \begin{pmatrix} B_L B_R \end{pmatrix} \rightarrow \begin{pmatrix} B_0 B_1 B_2 \end{pmatrix}, \begin{pmatrix} C_{TL} C_{TR} \\ C_{BL} C_{BR} \end{pmatrix} \rightarrow $
	$ \begin{pmatrix} C_{00} & C_{01} & C_{02} \\ C_{10} & C_{11} & C_{12} \\ C_{20} & C_{21} & C_{22} \end{pmatrix} $ where A_1 has b columns, B_1 has b columns, C_{11} is $b \times b$
	$C_{10} := A_1^T B_0 + \widehat{C}_{10}$ $C_{11} := A_1^T B_1 + B_1^T A_1 + \widehat{C}_{11}$ $C_{21} := B_2^T A_1 + \widehat{C}_{21}$
	$ \left(A_{L} \middle A_{R} \right) \leftarrow \left(A_{0} \middle A_{1} \middle A_{2} \right) , \left(B_{L} \middle B_{R} \right) \leftarrow \left(B_{0} \middle B_{1} \middle B_{2} \right) , \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}} \right) \leftarrow \left(\frac{C_{00} \middle C_{01} \middle C_{02}}{C_{10} \middle C_{11} \middle C_{12}} \right) $
	endwhile

Algorithm: $[C] := \text{Syr2k_LT_BLK_VAr3}(A, B, C)$

$$A \to \left(A_L \middle| A_R\right), B \to \left(B_L \middle| B_R\right), C \to \left(\frac{C_{TL}}{C_{BL}}\middle| C_{BR}\right)$$

where A_L has 0 columns, B_L has 0 columns, C_{TL} is 0×0

while $n(A_L) < n(A)$ do

Determine block size b

$$\left(A_{L} \middle| A_{R} \right) \to \left(A_{0} \middle| A_{1} \middle| A_{2} \right) , \left(B_{L} \middle| B_{R} \right) \to \left(B_{0} \middle| B_{1} \middle| B_{2} \right) , \left(\frac{C_{TL} \middle| C_{TR}}{C_{BL} \middle| C_{BR}} \right) \to \left(\frac{C_{00} \middle| C_{01} \middle| C_{02}}{C_{10} \middle| C_{11} \middle| C_{12}} \right)$$

where A_1 has b columns, B_1 has b columns, C_{11} is $b \times b$

$$C_{10} := A_1^T B_0 + \widehat{C}_{10}$$

$$C_{11} := A_1^T B_1 + B_1^T A_1 + \widehat{C}_{11}$$

$$C_{21} := B_2^T A_1 + \widehat{C}_{21}$$

$$\left(A_{L} \middle| A_{R} \right) \leftarrow \left(A_{0} \middle| A_{1} \middle| A_{2} \right), \left(B_{L} \middle| B_{R} \right) \leftarrow \left(B_{0} \middle| B_{1} \middle| B_{2} \right), \left(\frac{C_{TL} \middle| C_{TR}}{C_{BL} \middle| C_{BR}} \right) \leftarrow \left(\frac{C_{00} \middle| C_{01} \middle| C_{02}}{C_{10} \middle| C_{11} \middle| C_{12}} \right)$$

endwhile