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: $[C] := \text{Syr}2\text{K_LT_BLK_VAR}1(A, B, C)$
1a	$C = \hat{C}$
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} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{\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}}{\widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \wedge n(A_L) < n(A) $
5a	Determine block size b
	$\left(A_L \middle A_R\right) \rightarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \rightarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}}\right) \rightarrow$
	$\left(\frac{C_{00}}{C_{01}} \Big C_{02} \right)$
	$egin{pmatrix} C_{00} & C_{01} & C_{02} \ \hline C_{10} & C_{11} & C_{12} \ \hline C_{20} & C_{21} & C_{22} \end{pmatrix}$
	where A_1 has b columns, B_1 has b columns, C_{11} is $b \times b$ $\begin{pmatrix} C_{00} & C_{01} & C_{02} \\ C_{01} & C_{02} \end{pmatrix} \begin{pmatrix} A_0^T B_0 + B_0^T A_0 + \widehat{C}_{02} \\ A_0^T B_0 + B_0^T A_0 + \widehat{C}_{02} \end{pmatrix} \begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix}$
6	$\begin{vmatrix} C_{00} C_{01} C_{02} \\ C_{10} C_{11} C_{12} \end{vmatrix} = \begin{vmatrix} C_{10} C_{11} C_{00} \\ C_{10} C_{11} C_{12} \\ C_{10} C_{11} C_{12} \end{vmatrix}$
	$ \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 \\ \widehat{C}_{10} & \widehat{C}_{11} & 0 \\ \widehat{C}_{20} & \widehat{C}_{21} \widehat{C}_{22} \end{pmatrix} $
8	$C_{10} := A_1^T B_0 + B_1^T A_0 + \widehat{C}_{10}$
0	$C_{11} := A_1^T B_1 + B_1^T A_1 + \widehat{C}_{11}$
5b	$\left(A_L \middle A_R\right) \leftarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \leftarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL}}{C_{BL}} \middle C_{BR}\right) \leftarrow$
	$\int C_{00} \left C_{01} \left C_{02} ight. ight)$
	$\overline{C_{10}}C_{11}C_{12}$
	$igg(\overline{C_{20}} C_{21} C_{22} igg)$
	$ \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 \\ A_1^T B_0 + B_1^T A_0 + \hat{C}_{10} & A_1^T B_1 + B_1^T A_1 + \hat{C}_{11} & 0 \\ \widehat{C}_{20} & \widehat{C}_{21} & \widehat{C}_{22} \end{pmatrix} $
7	$ C_{10} C_{11} C_{12} = A_1^T B_0 + B_1^T A_0 + \hat{C}_{10} A_1^T B_1 + B_1^T A_1 + \hat{C}_{11} 0 $
2	$\left(\frac{C_{TL}}{C_{BL}} \frac{C_{TR}}{C_{BR}}\right) = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{\widehat{C}_{BL}} \widehat{C}_{TR} \right)$
	endwhile
0.0	$\left(C_{TL}\middle C_{TR}\right) = \left(A_L^TB_L + B_L^TA_L + \widehat{C}_{TL}\middle \widehat{C}_{TR}\right)$
2,3	$ \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}}{\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: $[C] := \text{Syr}2\text{K_LT_BLK_VAR}1(A, B, C)$

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

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 $b \times b$

$$C_{10} := A_1^T B_0 + B_1^T A_0 + \widehat{C}_{10}$$

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

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

endwhile

Step	Algorithm: $[C] := \text{Syr}2\text{K_LT_BLK_VAR}1(A, B, C)$
1a	$C = \hat{C}$
4	where
2	
3	while do
2,3	\wedge
5a	Determine block size
	where
6	
8	
5b	
7	
2	
	endwhile
2,3	$\wedge \neg ($
1b	$[C] = \operatorname{Syr}2k \operatorname{lt}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{Syr}2\text{K_LT_BLK_VAR}1(A, B, C)$
1a	$C = \widehat{C}$
4	
	where
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}}{\widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix}\right) $
3	while 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}}{\widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \right) \wedge $
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}}{\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} \right) = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{\widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \right) \land \neg () $
1b	$[C] = \operatorname{Syr}2k \operatorname{lt}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{Syr}2\text{K_LT_BLK_VAR}1(A, B, C)$
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 + \widehat{C}_{TL} \widehat{C}_{TR}}{\widehat{C}_{BL} \widehat{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}}{\widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \wedge n(A_L) < n(A) $
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}}{\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}}{\widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \wedge \neg (n(A_L) < n(A)) $
1b	$[C] = \operatorname{Syr}2k_{-}\operatorname{lt}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{Syr}2\text{K_LT_BLK_VAR}1(A, B, C)$
1a	$C = \widehat{C}$
4	$A o \left(A_L \middle A_R\right), B o \left(B_L \middle B_R\right), C o \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}}\right)$
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 + \widehat{C}_{TL}}{\widehat{C}_{BL}} \widehat{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}}{\widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \wedge n(A_L) < n(A) $
5a	Determine block size
	1
	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}}{\widehat{C}_{BL}} \widehat{C}_{BR}\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}}{\widehat{C}_{BL}} \right) \wedge \neg (n(A_L) < n(A)) $
1b	$[C] = \operatorname{Syr}2k_{-}\operatorname{lt}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{Syr}2\text{K_LT_BLK_VAR}1(A, B, C)$
1a	$C = \hat{C}$
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} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{\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(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array}\right) = \left(\begin{array}{c c} A_L^T B_L + B_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \widehat{C}_{BL} & \widehat{C}_{BR} \end{array}\right) \wedge n(A_L) < n(A) $
5a	Determine block size b
	$\left(A_L \middle A_R\right) \rightarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \rightarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL}}{C_{BL}} \middle C_{BR}\right) \rightarrow$
	$egin{pmatrix} C_{00} & C_{01} & C_{02} \ \hline C_{10} & C_{11} & C_{12} \ \hline C_{20} & C_{21} & C_{22} \end{pmatrix}$
	$oxed{C_{10} C_{11} C_{12}}$
	$C_{20} C_{21} C_{22}$ where A_1 has b columns, B_1 has b columns, C_{11} is $b \times b$
	where T_1 has θ columns, D_1 has θ columns, C_{11} is $\theta \times \theta$
6	
8	
5b	$\left(A_L \middle A_R\right) \leftarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \leftarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}}\right) \leftarrow$
	$\left(\frac{C_{00} C_{01} C_{02}}{C_{00} C_{01} C_{02}} \right)$
	$egin{pmatrix} C_{00} & C_{01} & C_{02} \ \hline C_{10} & C_{11} & C_{12} \ \hline C_{20} & C_{21} & C_{22} \end{pmatrix}$
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}}{\widehat{C}_{BL}} \widehat{C}_{BR}\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}}{\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: $[C] := \text{Syr}2\text{K_LT_BLK_VAR}1(A, B, C)$
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} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{\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}}{\widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \wedge n(A_L) < n(A) $
5a	Determine block size b
	$\left(A_L \middle A_R\right) \rightarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \rightarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}}\right) \rightarrow$
	$egin{pmatrix} C_{00} & C_{01} & C_{02} \ \hline C_{10} & C_{11} & C_{12} \ \hline C_{20} & C_{21} & C_{22} \end{pmatrix}$
	$ \begin{pmatrix} 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	$\begin{pmatrix} C_{00} & C_{01} & C_{02} \\ \hline C_{10} & C_{11} & C_{12} \\ \hline C_{20} & C_{21} & C_{22} \end{pmatrix} = \begin{pmatrix} A_0^T B_0 + B_0^T A_0 + \widehat{C}_{00} & 0 & 0 \\ \hline \widehat{C}_{10} & \widehat{C}_{11} & 0 \\ \hline \widehat{C}_{20} & \widehat{C}_{21} \widehat{C}_{22} \end{pmatrix}$
8	
5b	$\left(A_L \middle A_R\right) \leftarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \leftarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL}}{C_{BL}} \middle C_{BR}\right) \leftarrow$
	$\left(rac{C_{00} \left C_{01} \right C_{02}}{C_{10} \left C_{11} \right C_{12}} \right)$
	$egin{pmatrix} C_{10} & C_{11} & C_{12} \ C_{20} & C_{21} & C_{22} \ \end{pmatrix}$
7	
	$\begin{pmatrix} C & C & A^T B + B^T A + \hat{C} & \hat{C} \end{pmatrix}$
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}}{\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}}{\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: $[C] := \text{Syr}2\text{K_LT_BLK_VAR}1(A, B, C)$
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} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{\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}}{\widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \wedge n(A_L) < n(A) $
5a	Determine block size b
	$\left(A_L \middle A_R\right) \rightarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \rightarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}}\right) \rightarrow$
	$egin{pmatrix} C_{00} & C_{01} & C_{02} \ \hline C_{10} & C_{11} & C_{12} \ \hline C_{20} & C_{21} & C_{22} \end{pmatrix}$
	$\begin{pmatrix} C_{10} & C_{11} & C_{12} \\ C_{20} & C_{21} & C_{22} \end{pmatrix}$ where A_1 has b columns, B_1 has b columns, C_{11} is $b \times b$
6	$\begin{pmatrix} C_{00} & C_{01} & C_{02} \\ \hline C_{10} & C_{11} & C_{12} \\ \hline C_{20} & C_{21} & C_{22} \end{pmatrix} = \begin{pmatrix} A_0^T B_0 + B_0^T A_0 + \widehat{C}_{00} & 0 & 0 \\ \hline \widehat{C}_{10} & \widehat{C}_{11} & 0 \\ \hline \widehat{C}_{20} & \widehat{C}_{21} \widehat{C}_{22} \end{pmatrix}$
	$C_{20} C_{21} C_{22} $ $C_{20} C_{21} C_{22} $
8	
5b	$\left(A_L \middle A_R\right) \leftarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \leftarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL}}{C_{BL}} \middle C_{BR}\right) \leftarrow$
	$\int C_{00} \left C_{01} \right C_{02}$
	$oxed{C_{10} C_{11} C_{12}}$
	$C_{20} C_{21} C_{22}$
	$\begin{pmatrix} C_{00} & C_{01} & C_{02} \\ \hline C_{10} & C_{11} & C_{12} \\ \hline C_{20} & C_{21} & C_{22} \end{pmatrix} = \begin{pmatrix} A_0^T B_0 + B_0^T A_0 + \widehat{C}_{00} & 0 & 0 \\ \hline A_1^T B_0 + B_1^T A_0 + \widehat{C}_{10} & A_1^T B_1 + B_1^T A_1 + \widehat{C}_{11} & 0 \\ \hline \widehat{C}_{20} & \widehat{C}_{21} & \widehat{C}_{22} \end{pmatrix}$
7	$ \left \begin{array}{c c} C_{10} C_{11} C_{12} \\ \hline \end{array} \right = \left \begin{array}{c c} A_1^T B_0 + B_1^T A_0 + C_{10} A_1^T B_1 + B_1^T A_1 + C_{11} 0 \\ \hline \end{array} \right $
	$C_{20} C_{21} C_{22}$ C_{20} C_{21} C_{22}
2	$ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ C_{BL} & C_{BR} \end{array}\right) = \left(\begin{array}{c c} A_L^T B_L + B_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \widehat{C}_{BL} & \widehat{C}_{BR} \end{array}\right) $
	endwhile
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}}{\widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \right) \wedge \neg (n(A_L) < n(A)) $
1b	$[C] = \operatorname{Syr}2k \operatorname{lt}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{Syr}2\text{K_LT_BLK_VAR}1(A, B, C)$
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} = \left(\frac{A_L^T B_L + B_L^T A_L + \widehat{C}_{TL}}{\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}}{\widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \wedge n(A_L) < n(A) $
5a	Determine block size b
	$\left(A_L \middle A_R\right) \rightarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \rightarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}}\right) \rightarrow$
	$\left(C_{00} \left C_{01} \right C_{02} \right)$
	$egin{pmatrix} C_{00} & C_{01} & C_{02} \ \hline C_{10} & C_{11} & C_{12} \ \hline C_{20} & C_{21} & C_{22} \end{pmatrix}$
	(/
	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	$ \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 \\ \widehat{C}_{10} & \widehat{C}_{11} & 0 \\ \widehat{C}_{20} & \widehat{C}_{21} \widehat{C}_{22} \end{pmatrix} $
	$\left\langle \overline{C_{20}} \overline{C_{21}} \overline{C_{22}} \right angle \left\langle \overline{\widehat{C}_{20}} \overline{\widehat{C}_{21}} \overline{\widehat{C}_{22}} \right angle$
8	$C_{10} := A_1^T B_0 + B_1^T A_0 + \widehat{C}_{10}$
	$C_{11} := A_1^T B_1 + B_1^T A_1 + \widehat{C}_{11}$
5b	$\left(A_L \middle A_R\right) \leftarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \leftarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL}}{C_{BL}} \middle C_{BR}\right) \leftarrow$
	$\int C_{00} C_{01} C_{02}$
	$C_{10} C_{11} C_{12}$
	$igg C_{20} C_{21} C_{22} igg $
	$\begin{pmatrix} C_{00} & C_{01} & C_{02} \\ \hline C_{10} & C_{11} & C_{12} \\ \hline C_{20} & C_{21} & C_{22} \end{pmatrix} = \begin{pmatrix} A_0^T B_0 + B_0^T A_0 + \widehat{C}_{00} & 0 & 0 \\ \hline A_1^T B_0 + B_1^T A_0 + \widehat{C}_{10} & A_1^T B_1 + B_1^T A_1 + \widehat{C}_{11} & 0 \\ \hline \widehat{C}_{20} & \widehat{C}_{21} & \widehat{C}_{22} \end{pmatrix}$
7	$ \left \begin{array}{c c} C_{10} C_{11} C_{12} \\ \hline C_{10} C_{10} C_{10} \\ \hline C_{10} C_{10} \\ \hline C_{10} C_{10} C_{10} \\ \hline C_{10} C_{10} \\ \hline C_{10} C_{10} C_{10} $
	$C_{20} C_{21} C_{22}$ C_{20} C_{21} C_{22}
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}}{\widehat{C}_{BL}}\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}}{\widehat{C}_{BL}} \wedge \neg (n(A_L) < n(A))\right) $
۷,3	$\left(\overline{C_{BL}} C_{BR} \right) = \left(\overline{\widehat{C}_{BL}} \widehat{C}_{BR} \right) \wedge \left(\overline{n(A_L)} < \overline{n(A)} \right)$
1b	$[C] = \operatorname{Syr}2k \operatorname{lt}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{Syr}2\text{K_LT_BLK_VAR}1(A, B, C)$
	$A o \left(A_L \middle A_R\right) , B o \left(B_L \middle B_R\right) , C o \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}}\right)$
	where A_L has 0 columns, B_L has 0 columns, C_{TL} is 0×0
	while $n(A_L) < n(A)$ do
	Determine block size b
	$\left(A_L \middle A_R\right) \rightarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \rightarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}}\right) \rightarrow$
	$egin{pmatrix} C_{00} & C_{01} & C_{02} \ \hline C_{10} & C_{11} & C_{12} \ \hline C_{12} & C_{12} & C_{13} \end{bmatrix}$
	$C_{20} C_{21} C_{22}$ where A_1 has b columns, B_1 has b columns, C_{11} is $b \times b$
	$C = A^T D + D^T A + \hat{C}$
	$C_{10} := A_1^T B_0 + B_1^T A_0 + \widehat{C}_{10}$ $C_{11} := A_1^T B_1 + B_1^T A_1 + \widehat{C}_{11}$
	$\left(A_L \middle A_R\right) \leftarrow \left(A_0 \middle A_1 \middle A_2\right) , \left(B_L \middle B_R\right) \leftarrow \left(B_0 \middle B_1 \middle B_2\right) , \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}}\right) \leftarrow$
	$egin{pmatrix} C_{00} & C_{01} & C_{02} \ \hline C_{10} & C_{11} & C_{12} \ \hline C_{20} & C_{21} & C_{22} \end{pmatrix}$
	endwhile

Algorithm: $[C] := \text{Syr2K_LT_BLK_VAr1}(A, B, C)$

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

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 $b \times b$

$$C_{10} := A_1^T B_0 + B_1^T A_0 + \widehat{C}_{10}$$

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

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

endwhile