Step	Algorithm: $C = A^T A + C$
1a	${C = \widehat{C}}$
4	$A \to \left(\begin{array}{c c} A_L & A_R \end{array} \right), C \to \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right)$ where A_L has 0 columns, C_{TL} is 0×0
2	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right)$
3	while $n(A_L) < n(A)$ do
2,3	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge n(A_L) < n(A)$
5a	$ \begin{pmatrix} A_L \mid A_R \end{pmatrix} \to \begin{pmatrix} A_0 \mid A_1 \mid A_2 \end{pmatrix}, \begin{pmatrix} C_{TL} \mid C_{TR} \\ C_{BL} \mid C_{BR} \end{pmatrix} \to \begin{pmatrix} \widehat{C}_{00} \mid \widehat{c}_{01} \mid \widehat{C}_{02} \\ \widehat{C}_{10}^T \mid \widehat{c}_{11} \mid \widehat{C}_{12}^T \\ \widehat{C}_{20} \mid \widehat{C}_{21} \mid \widehat{C}_{22} \end{pmatrix} $ where γ_{11} is 1×1
6	$ \left\{ \begin{array}{c c} C_{00} & C_{01} & C_{02} \\ \hline C_{10}^T & \gamma_{11} & C_{12}^T \\ C_{20} & C_{21} & C_{22} \end{array}\right\} = \left(\begin{array}{c c} A_0^T A_0 + \widehat{C}_{00} & \widehat{C}_{01} & \widehat{C}_{02} \\ \hline \widehat{C}_{10}^T & \widehat{\gamma}_{11} & \widehat{C}_{12}^T \\ \widehat{C}_{20} & \widehat{C}_{21} & \widehat{C}_{22} \end{array}\right) $
8	$C_0 1 := A_0^T A_1 + \widehat{C}_0 1$ $\gamma_{11} := A_1^T A_1 + \widehat{\gamma}_{11}$
7	$ \left\{ \begin{array}{c c} C_{00} & C_{01} & C_{02} \\ C_{10}^T & \gamma_{11} & C_{12}^T \\ \hline C_{20} & C_{21} & C_{22} \end{array} \right\} = \left(\begin{array}{c c} A_0^T A_0 + \widehat{C}_{00} & A_0^T A_1 + \widehat{C}_0 1 & \widehat{C}_{02} \\ \widehat{C}_{10}^T & \widehat{A}_1^T A_1 + \widehat{\gamma}_{11} & \widehat{C}_{12}^T \\ \hline \widehat{C}_{20} & \widehat{C}_{21} & \widehat{C}_{22} \end{array} \right) $
5b	$A \to \left(\begin{array}{c c c} A_L & A_R \end{array} \right) \leftarrow \left(\begin{array}{c c c} A_0 & A_1 & A_2 \end{array} \right) , \left(\begin{array}{c c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c c c} C_{00} & C_{01} & C_{02} \\ \hline C_{10}^T & \gamma_{11} & C_{12}^T \\ \hline C_{20} & C_{21} & C_{22} \end{array} \right)$
2	$ \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 A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) $
	endwhile
2,3	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \land \neg (n(A_L) < n(A))$
1b	$\{[C] = \operatorname{syrk_ac}(A, \widehat{C})$

Step	Algorithm: $C = A^T A + C$	
1a	{	}
4		
	where	
		7
2		
3	while do	
	(7
2,3	$ \langle \rangle $	}
		_
5a		
	where	
C		
6		
		_
8		
7		}
		_
5b		
2		}
	endwhile	_
	chawine characteristics and the characteristics and the characteristics are characteristics.	7
2,3	│ 	}
1b		}

Step	Algorithm: $C = A^T A + C$
1a	$\{C = \widehat{C}\}$
4	where
2	
3	while do
2,3	
5a	where
6	
8	
7	
5b	
2	
	endwhile
2,3	$\left \left. \left\{ \right. \right. \right. \right. \right. $
1b	$\left\{ [C] = \operatorname{syrk_ac}(A, \widehat{C}) \right\}$

Step	Algorithm: $C = A^T A + C$
1a	${C = \widehat{C}}$
4	where
2	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right)$
3	while do
2,3	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge \right.$
5a	where
6	
8	
7	
5b	
2	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right)$
	endwhile
2,3	$ \left\{ \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 A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \land \neg () \right\} $
1b	$\left\{ [C] = \operatorname{syrk_ac}(A, \widehat{C}) \right\}$

Step	Algorithm: $C = A^T A + C$
1a	$\{C = \widehat{C}$
4	where
2	$ \left\{ \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 A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) $
3	while $n(A_L) < n(A)$ do
2,3	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge n(A_L) < n(A)$
5a	where
6	
8	
7	
5b	
2	$ \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 A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) $
	endwhile
2,3	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge \neg (n(A_L) < n(A)) \right\}$
1b	$\left\{ [C] = \operatorname{syrk_ac}(A, \widehat{C}) \right\}$

Step	Algorithm: $C = A^T A + C$
1a	$\{C = \widehat{C}$
4	$\{C = \widehat{C} \}$ $A \to \left(A_L \middle A_R \right), C \to \left(\frac{C_{TL} \middle C_{TR}}{C_{BL} \middle C_{BR}} \right)$ where A_L has 0 columns, C_{TL} is 0×0
2	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \right\}$
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 A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge n(A_L) < n(A) $
5a	where
6	
8	
7	
5b	
2	$ \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 A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) $
	endwhile
2,3	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \land \neg (n(A_L) < n(A)) \right\}$
1b	$\{[C] = \operatorname{syrk_ac}(A, \widehat{C})$

Step	Algorithm: $C = A^T A + C$
1a	${C = \widehat{C}}$
4	$A \to \left(\begin{array}{c c} A_L & A_R \end{array} \right) , C \to \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right)$ where A_L has 0 columns, C_{TL} is 0×0
2	$ \left\{ \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 A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) $
3	while $n(A_L) < n(A)$ do
2,3	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge n(A_L) < n(A)$
5a	$ \begin{pmatrix} A_L \mid A_R \end{pmatrix} \to \begin{pmatrix} A_0 \mid A_1 \mid A_2 \end{pmatrix}, \begin{pmatrix} C_{TL} \mid C_{TR} \\ C_{BL} \mid C_{BR} \end{pmatrix} \to \begin{pmatrix} \widehat{C}_{00} \mid \widehat{c}_{01} \mid \widehat{C}_{02} \\ \widehat{C}_{10}^T \mid \widehat{c}_{11} \mid \widehat{C}_{12}^T \\ \widehat{C}_{20} \mid \widehat{C}_{21} \mid \widehat{C}_{22} \end{pmatrix} $ where γ_{11} is 1×1
6	
8	
7	
5b	$A \to \left(\begin{array}{c c c} A_L & A_R \end{array} \right) \leftarrow \left(\begin{array}{c c c} A_0 & A_1 & A_2 \end{array} \right) , \left(\begin{array}{c c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c c c} C_{00} & C_{01} & C_{02} \\ \hline C_{10}^T & \gamma_{11} & C_{12}^T \\ \hline C_{20} & C_{21} & C_{22} \end{array} \right)$
2	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right)$
	endwhile
2,3	$\left\{ \left(\frac{C_{TL}}{C_{BL}} \left \frac{C_{TR}}{C_{BR}} \right) = \left(\frac{A_L^T A_L + \widehat{C}_{TL}}{\widehat{C}_{BL}} \left \widehat{C}_{TR} \right \right) \land \neg (n(A_L) < n(A)) \right\}$
1b	$\left\{ [C] = \operatorname{syrk_ac}(A, \widehat{C}) \right\}$

Step	Algorithm: $C = A^T A + C$	
1a	$\{C=\widehat{C}$	}
4	$A o \left(\begin{array}{c c} A_L & A_R \end{array} \right) , C o \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right)$ where A_L has 0 columns, C_{TL} is $0 imes 0$	
2	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right)$	
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 A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge n(A_L) < n(A) $	
5a	$ \left(\begin{array}{c c} A_L & A_R \end{array} \right) \rightarrow \left(\begin{array}{c c} A_0 & A_1 & A_2 \end{array} \right) , \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \rightarrow \left(\begin{array}{c c} \widehat{C}_{00} & \widehat{c}_{01} & \widehat{C}_{02} \\ \hline \widehat{C}_{10}^T & \widehat{\gamma}_{11} & \widehat{C}_{12}^T \\ \widehat{C}_{20} & \widehat{C}_{21} & \widehat{C}_{22} \end{array} \right) $ where γ_{11} is 1×1	
6	$ \begin{cases} \frac{C_{00}}{C_{01}} & C_{02} \\ C_{10}^{T} & \gamma_{11} & C_{12}^{T} \\ C_{20} & C_{21} & C_{22} \end{cases} = \begin{pmatrix} \frac{A_{0}^{T} A_{0} + \widehat{C}_{00}}{\widehat{C}_{10}} & \widehat{C}_{01} & \widehat{C}_{02} \\ \widehat{C}_{10}^{T} & \widehat{\gamma}_{11} & \widehat{C}_{12}^{T} \\ \widehat{C}_{20} & \widehat{C}_{21} & \widehat{C}_{22} \end{cases} $	
8		
7		
5b	$A \to \left(\begin{array}{c c c} A_L & A_R \end{array} \right) \leftarrow \left(\begin{array}{c c c} A_0 & A_1 & A_2 \end{array} \right) , \left(\begin{array}{c c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c c c} C_{00} & C_{01} & C_{02} \\ \hline C_{10}^T & \gamma_{11} & C_{12}^T \\ \hline C_{20} & C_{21} & C_{22} \end{array} \right)$	
2	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right)$	
	endwhile	
2,3	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \land \neg (n(A_L) < n(A))$	
1b	$\{[C] = \operatorname{syrk_ac}(A, \widehat{C})$	}

Step	Algorithm: $C = A^T A + C$
1a	${C = \widehat{C}}$
4	$A \to \begin{pmatrix} A_L A_R \end{pmatrix}$, $C \to \begin{pmatrix} C_{TL} C_{TR} \\ C_{BL} C_{BR} \end{pmatrix}$ where A_L has 0 columns, C_{TL} is 0×0
2	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \right.$
3	while $n(A_L) < n(A)$ do
2,3	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right\} = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge n(A_L) < n(A)$
5a	$ \left(\begin{array}{c c} A_L & A_R \end{array} \right) \rightarrow \left(\begin{array}{c c} A_0 & A_1 & A_2 \end{array} \right) , \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \rightarrow \left(\begin{array}{c c} \widehat{C}_{00} & \widehat{c}_{01} & \widehat{C}_{02} \\ \hline \widehat{C}_{10}^T & \widehat{\gamma}_{11} & \widehat{C}_{12}^T \\ \widehat{C}_{20} & \widehat{C}_{21} & \widehat{C}_{22} \end{array} \right) $
6	$ \begin{cases} \frac{C_{00}}{C_{01}} & C_{02} \\ C_{10} & \gamma_{11} & C_{12}^{T} \\ C_{20} & C_{21} & C_{22} \end{cases} = \begin{pmatrix} \frac{A_{0}^{T} A_{0} + \widehat{C}_{00}}{\widehat{C}_{10}} & \widehat{C}_{01} & \widehat{C}_{02} \\ \widehat{C}_{10}^{T} & \widehat{\gamma}_{11} & \widehat{C}_{12}^{T} \\ \widehat{C}_{20} & \widehat{C}_{21} & \widehat{C}_{22} \end{pmatrix} $
8	
7	$ \left\{ \begin{array}{c cc} C_{00} & C_{01} & C_{02} \\ C_{10}^T & \gamma_{11} & C_{12}^T \\ C_{20} & C_{21} & C_{22} \end{array} \right\} = \left(\begin{array}{c cc} A_0^T A_0 + \widehat{C}_{00} & A_0^T A_1 + \widehat{C}_0 1 & \widehat{C}_{02} \\ \widehat{C}_{10}^T & \widehat{A}_1^T A_1 + \widehat{\gamma}_{11} & \widehat{C}_{12}^T \\ \widehat{C}_{20} & \widehat{C}_{21} & \widehat{C}_{22} \end{array} \right) $
5b	$A \to \left(\begin{array}{c c c} A_L & A_R \end{array} \right) \leftarrow \left(\begin{array}{c c c} A_0 & A_1 & A_2 \end{array} \right) , \left(\begin{array}{c c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c c c} C_{00} & C_{01} & C_{02} \\ \hline C_{10} & \gamma_{11} & C_{12}^T \\ \hline C_{20} & C_{21} & C_{22} \end{array} \right)$
2	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right)$
	endwhile
2,3	$ \left\{ \left(\frac{C_{TL}}{C_{BL}} \left \frac{C_{TR}}{C_{BR}} \right) = \left(\frac{A_L^T A_L + \widehat{C}_{TL}}{\widehat{C}_{BL}} \left \widehat{C}_{TR} \right \right) \land \neg (n(A_L) < n(A)) \right\} $
1b	$\left\{ [C] = \operatorname{syrk_ac}(A, \widehat{C}) \right\}$

Step	Algorithm: $C = A^T A + C$
1a	$\{C = \widehat{C}\}$
4	$A o \left(\begin{array}{c c} A_L & A_R \end{array} \right), C o \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right)$ where A_L has 0 columns, C_{TL} is $0 imes 0$
2	$\left\{ \left(\frac{C_{TL}}{C_{BL}} \begin{vmatrix} C_{TR} \\ C_{BL} \end{vmatrix} \right) = \left(\frac{A_L^T A_L + \widehat{C}_{TL}}{\widehat{C}_{BL}} \begin{vmatrix} \widehat{C}_{TR} \\ \widehat{C}_{BR} \end{vmatrix} \right) \right\}$
3	while $n(A_L) < n(A)$ do
2,3	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right\} = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge n(A_L) < n(A)$
5a	$ \left(\begin{array}{c c} A_L & A_R \end{array} \right) \rightarrow \left(\begin{array}{c c} A_0 & A_1 & A_2 \end{array} \right) , \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \rightarrow \left(\begin{array}{c c} \widehat{C}_{00} & \widehat{c}_{01} & \widehat{C}_{02} \\ \hline \widehat{C}_{10}^T & \widehat{\gamma}_{11} & \widehat{C}_{12}^T \\ \widehat{C}_{20} & \widehat{C}_{21} & \widehat{C}_{22} \end{array} \right) $ where c_{CC} is 1×1
6	$ \begin{cases} \frac{V_{11} \text{ is } 1 \times 1}{C_{00} C_{01} C_{02}} \\ \frac{C_{00} C_{01} C_{02}}{C_{10} C_{10}} \\ C_{20} C_{21} C_{22} \end{cases} = \begin{pmatrix} \frac{A_0^T A_0 + \hat{C}_{00} \hat{C}_{01} \hat{C}_{02}}{\hat{C}_{10} \hat{C}_{10}} \\ \hat{C}_{20} \hat{C}_{21} \hat{C}_{22} \end{pmatrix} $
8	$C_0 1 := A_0^T A_1 + \widehat{C}_0 1$ $\gamma_{11} := A_1^T A_1 + \widehat{\gamma}_{11}$
7	$ \left\{ \begin{array}{c c} C_{00} & C_{01} & C_{02} \\ C_{10}^T & \gamma_{11} & C_{12}^T \\ C_{20} & C_{21} & C_{22} \end{array} \right) = \left(\begin{array}{c c} A_0^T A_0 + \hat{C}_{00} & A_0^T A_1 + \hat{C}_0 1 & \hat{C}_{02} \\ \hat{C}_{10}^T & \hat{A}_1^T A_1 + \hat{\gamma}_{11} & \hat{C}_{12}^T \\ \hline \hat{C}_{20} & \hat{C}_{21} & \hat{C}_{22} \end{array} \right) $
5b	$A \to \left(\begin{array}{c c c} A_L & A_R \end{array} \right) \leftarrow \left(\begin{array}{c c c} A_0 & A_1 & A_2 \end{array} \right) , \left(\begin{array}{c c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c c c} C_{00} & C_{01} & C_{02} \\ \hline C_{10} & \gamma_{11} & C_{12}^T \\ \hline C_{20} & C_{21} & C_{22} \end{array} \right)$
2	$ \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 A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) $
	endwhile
2,3	$\left\{ \left(\frac{C_{TL} \mid C_{TR}}{C_{BL} \mid C_{BR}} \right) = \left(\frac{A_L^T A_L + \widehat{C}_{TL} \mid \widehat{C}_{TR}}{\widehat{C}_{BL} \mid \widehat{C}_{BR}} \right) \land \neg (n(A_L) < n(A)) \right\}$
1b	$\left\{ [C] = \operatorname{syrk_ac}(A, \widehat{C}) \right\}$

Algorithm: $C = A^T A + C$
$A o \left(\begin{array}{c c} A_L & A_R \end{array} \right), C o \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right)$ where A_L has 0 columns, C_{TL} is $0 imes 0$
while $n(A_L) < n(A)$ do
$\begin{pmatrix} A_L \mid A_R \end{pmatrix} \rightarrow \begin{pmatrix} A_0 \mid A_1 \mid A_2 \end{pmatrix}, \begin{pmatrix} C_{TL} \mid C_{TR} \\ \hline C_{BL} \mid C_{BR} \end{pmatrix} \rightarrow \begin{pmatrix} \widehat{C}_{00} \mid \widehat{c}_{01} \mid \widehat{C}_{02} \\ \widehat{C}_{10}^T \mid \widehat{\gamma}_{11} \mid \widehat{C}_{12}^T \\ \widehat{C}_{20} \mid \widehat{C}_{21} \mid \widehat{C}_{22} \end{pmatrix}$ where γ_{11} is 1×1
$C_0 1 := A_0^T A_1 + \widehat{C}_0 1$ $\gamma_{11} := A_1^T A_1 + \widehat{\gamma}_{11}$
$A \to \left(\begin{array}{c c c} A_L & A_R \end{array} \right) \leftarrow \left(\begin{array}{c c c} A_0 & A_1 & A_2 \end{array} \right) , \left(\begin{array}{c c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c c c} C_{00} & C_{01} & C_{02} \\ \hline C_{10}^T & \gamma_{11} & C_{12}^T \\ \hline C_{20} & C_{21} & C_{22} \end{array} \right)$
endwhile

Algorithm: $C = A^T A + C$

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

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

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

$$\left(\begin{array}{c|c|c} A_L & A_R \end{array} \right) \to \left(\begin{array}{c|c|c} A_0 & A_1 & A_2 \end{array} \right) , \left(\begin{array}{c|c|c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \to \left(\begin{array}{c|c|c} \widehat{C}_{00} & \widehat{c}_{01} & \widehat{C}_{02} \\ \hline \widehat{C}_{10}^T & \widehat{\gamma}_{11} & \widehat{C}_{12}^T \\ \hline \widehat{C}_{20} & \widehat{C}_{21} & \widehat{C}_{22} \end{array} \right)$$

where γ_{11} is 1×1

$$C_0 1 := A_0^T A_1 + \widehat{C}_0 1$$

$$\gamma_{11} := A_1^T A_1 + \widehat{\gamma}_{11}$$

$$A \to \left(\begin{array}{c|c|c} A_L & A_R \end{array} \right) \leftarrow \left(\begin{array}{c|c|c} A_0 & A_1 & A_2 \end{array} \right) \, , \, \left(\begin{array}{c|c|c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c|c|c} C_{00} & C_{01} & C_{02} \\ \hline C_{10}^T & \gamma_{11} & C_{12}^T \\ \hline C_{20} & C_{21} & C_{22} \end{array} \right)$$

endwhile