**Pseudo-Code for LDLT Updating**

(m stands for the rank-m update; m=1 for our ME implementation)

Procedure { NewL NewD } = LDLTUP { L,D,omg,m } /\* omg replaces D[1:m,1:m] \*/

 n=rows(L); n1-n-m; M1=Omg; D2[m+1:n,m+1:n]; B = zeros(n1,m);

 L22 = L[m+1:n,m+1:n]; z = (inv(L22))\*L[m+1:n,1:m]; NewL=eye(n1);

 NewD = zeros(n1,n1);

 if n1<=m;

 newL = eye(n1); newD = z[1:n1,.]\*omega\*((z[1:n1,.])')+D2;

 else;

 for i(1,n1,m);

 if i+m-1<=n1;

 t = M1\*((z[i:i+m-1,.])');

 NewD[i:i+m-1,i:i+m-1] = D2[i:i+m-1,i:i+m-1] +z[i:i+m-1,.]\*t;

 Dinv = inv(NewD[i:i+m-1,i:i+m-1]); B[i:i+m-1,.]=((t\*Dinv)');

 M1 = M1-t\*Dinv\*t';

 if i<n1-m+1;

 if i!=n1-m;

 newL[i+m:i+2\*m-1,1:i+m-1]=z[i+m:i+2\*m-1,.]\*((b[1:i+m-1,.])');

 elseif i==n1-m;

 newL[i+m,1:i+m-1]=z[i+m,.]\*((b[1:i+m-1,.])');

 endif;

 endif;

 elseif i==n1;

 t = M1\*((z[i,.])'); NewD[i,i] = D2[i,i] +z[i,.]\*t;

 endif;

 endfor;

 endif;

 return(L22\*newL,newD);