```
    DO v = 1, nVal
       DO c = nVal+1, nMax
          omegacv=band(c) - band(v)
          tmp = 0.d0
          DO da=1,3
             DO db=1,3
                DO dc=1,3
!!! this is for interband 2w contributions
!!!  virtual-hole
                   do vp=1,nVal
                      if((vp.ne.v).and.(vp.ne.c))then
                         omegacvp=band(c) - band(vp)
                         omegacvpcv=(2.*omegacvp-omegacv)
                         IF ((omegacvpcv.ge.0.d0).and.(omegacvpcv.le.tol))
                            omegacvpcv=omegacvpcv+tol
                         IF ((omegacvpcv.le.0.d0).and.(omegacvpcv.ge.(-tol)))
                            omegacvpcv=omegacvpcv-tol
                        psym=(posMatElem(db,c,vp)*posMatElem(dc,vp,v)&
                             +posMatElem(dc,c,vp)*posMatElem(db,vp,v))/2.
                         tmp=tmp-4.*T3(da,db,dc)*aimag(calVsig(da,v,c)*psym)&
                              /(omegacv*omegacvpcv)
                      end if
                   end do
!!!! virtual-electron
                   do cp=nVal+1,nMax
                      if((cp.ne.v).and.(cp.ne.c))then
                         omegacpv=band(cp) - band(v)
                         omegacpvcv=(2.*omegacpv-omegacv)
                         IF ((omegacpvcv.ge.0.d0).and.(omegacpvcv.le.tol))
                            omegacpvcv=omegacpvcv+tol
                         IF ((omegacpvcv.le.0.d0).and.(omegacpvcv.ge.(-tol)))
                            omegacpvcv=omegacpvcv-tol
                         psym=(posMatElem(db,c,cp)*posMatElem(dc,cp,v)&
                              +posMatElem(dc,c,cp)*posMatElem(db,cp,v))/2.
                         tmp=tmp+4.*T3(da,db,dc)*aimag(calVsig(da,v,c)*psym)&
                              /(omegacv*omegacpvcv)
                      end if
                   end do
!!! this is for intraband 2w contributions
                   psym=(derMatElem(db,dc,c,v)+derMatElem(dc,db,c,v))/2.
                   psym1=(posMatElem(db,c,v)*delta(dc,c,v)&
                         +posMatElem(dc,c,v)*delta(db,c,v))/2.
                   tmp=tmp+4.*(T3(da,db,dc)/(omegacv)**2)&
                        *(real(calVsig(da,v,c)*psym) &
                        -2.*real(calVsig(da,v,c)*psym1)/omegacv)
                END DO
             END DO
          END DO
```