bgd $\sum_k^{0,N} \mathcal{L}_j^{0,D} 0 \Rightarrow d[k,j]$

$\mathcal{L}_k^{0,N} \mathcal{L}_i^{0,M} \sum_j^{0,D} x[i,j] * w_k[j] \Rightarrow s_k[k,i]$

$\mathcal{L}_k^{0,N} \sum_i^{0,M} \mathcal{L}_j^{0,D} (s_k[k,i] * x[i,j]) \Rightarrow d_k[k,j]$

$\sum_k^{0,N} \mathcal{L}_j^{0,D} (r * d_k[k,j]) \Rightarrow w_k[j]$

ccsd_onesize

$\mathcal{L}_a^{0,V} \mathcal{L}_b^{0,V} \mathcal{L}_c^{0,V} \mathcal{L}_i^{0,O} \mathcal{L}_j^{0,O} \mathcal{L}_k^{0,O} \sum_e^{0,V} \sum_m^{0,O} (T_2[a,b,k,m] * O_1[c,m,i,j] + T_2[c,e,i,j] * O_2[a,b,e,k]) \Rightarrow X[a,b,c,i,j,k]$

$T_2\{a,b,k,m\}$ $O_1\{c,m,i,j\}$ $T_2\{c,e,i,j\}$ $O_2\{a,b,e,k\}$

$\mathcal{L}_a^{0,V} \mathcal{L}_b^{0,V} \mathcal{L}_c^{0,V} \mathcal{L}_i^{0,O} \mathcal{L}_j^{0,O} \mathcal{L}_k^{0,O} \sum_m^{0,O} T_2[a,b,k,m] * O_1[c,m,i,j] \Rightarrow tmp1[a,b,c,i,j,k]$

$\mathcal{L}_a^{0,V} \mathcal{L}_b^{0,V} \mathcal{L}_c^{0,V} \mathcal{L}_i^{0,O} \mathcal{L}_j^{0,O} \mathcal{L}_k^{0,O} \sum_e^{0,V} T_2[c,e,i,j] * O_2[a,b,e,k] \Rightarrow tmp2[a,b,c,i,j,k]$

$V \Rightarrow tmp3$ $\quad 0 \Rightarrow tmp4$

$\mathcal{L}_a^{0,V} \mathcal{L}_b^{0,V} \mathcal{L}_c^{0,V} \mathcal{L}_i^{0,O} \mathcal{L}_j^{0,O} \mathcal{L}_k^{0,O} (tmp3 \cdot tmp1[a,b,c,i,j,k] + tmp4 \cdot tmp2[a,b,c,i,j,k]) \Rightarrow X[a,b,c,i,j,k]$

ccsd_multisize

$\mathcal{L}_a^{0,V} \mathcal{L}_b^{0,V} \mathcal{L}_c^{0,V} \mathcal{L}_i^{0,O} \mathcal{L}_j^{0,O} \mathcal{L}_k^{0,O} \sum_e^{0,V} \sum_m^{0,1000} (T_2[c,e,i,j] * O_2[a,b,e,k]) \Rightarrow X[a,b,c,i,j,k]$

$\mathcal{L}_a^{0,V} \mathcal{L}_b^{0,V} \mathcal{L}_c^{0,V} \mathcal{L}_i^{0,O} \mathcal{L}_j^{0,O} \mathcal{L}_k^{0,O} \sum_e^{0,V} (T_2[c,e,i,j] * O_2[a,b,e,k]) \Rightarrow tmp1[a,b,c,i,j,k]$

$1000 \Rightarrow tmp2$ $\quad \mathcal{L}_a^{0,V} \mathcal{L}_b^{0,V} \mathcal{L}_c^{0,V} \mathcal{L}_i^{0,O} \mathcal{L}_j^{0,O} \mathcal{L}_k^{0,O} tmp2 \cdot tmp1[a,b,c,i,j,k] \Rightarrow X[a,b,c,i,j,k]$

example 1

$\mathcal{L}_i^{0,m} \sum_j^{0,M} \mathcal{L}_k^{0,n} \sum_l^{0,n} x[i,l] * y[l,j] * s[j,k] \Rightarrow r[i,k]$

$\mathcal{L}_i^{0,m} \mathcal{L}_j^{0,m} \sum_l^{0,n} x[i,l] * y[l,j] \Rightarrow tmp1[i,j]$

$\mathcal{L}_i^{0,m} \mathcal{L}_k^{0,n} \sum_j^{0,m} tmp1[i,j] * s[j,k] \Rightarrow r[i,k]$

example 2

$w_t \sum_i^{0,m} (a[i] + b[i] * w_t) \Rightarrow d_t$

$\sum_i^{0,m} a[i] \Rightarrow tmp1$ $\quad \sum_i^{0,m} b[i] \Rightarrow tmp2$

$w_t (tmp1 + tmp2 * w_t) \Rightarrow d_t$

fmri

$$\mathcal{L}_{inter}^{0,iter}\ \mathcal{L}_{i}^{0,N}\ \sum_{j}^{0,i+1}(b[i]*c[j]) \Rightarrow a[i]$$

$$iter \Rightarrow tmp1 \qquad \mathcal{L}_{t,s\le i}^{0,N^2}(b[t]*c[t]) \Rightarrow tmp2[i]$$

$$\mathcal{L}_{i}^{0,N} tmp1 * tmp2[i] \Rightarrow a[i]$$

fuse

$$\mathcal{L}_{inter}^{0,iter}\ \mathcal{L}_{i}^{0,N}\ \sum_{j}^{0,N+1} b[j] \Rightarrow a[2*i]$$

$$\mathcal{L}_{inter}^{0,iter}\ \mathcal{L}_{i}^{0,N}\ \sum_{j}^{0,N+1} b[j] \Rightarrow a[2*i+1]$$

$$\sum_{j}^{0,N+1} b[j] \Rightarrow tmp1 \qquad \mathcal{L}_{i}^{0,N} tmp1 * tmp2 \Rightarrow a[2*i]$$

$$iter \Rightarrow tmp2 \qquad \mathcal{L}_{i}^{0,N} tmp1 * tmp2 \Rightarrow a[2*i+1]$$

pde

$$\mathcal{L}_{k}^{2,zn-1}\mathcal{L}_{j}^{2,yn-1}\mathcal{L}_{i}^{2,xn-1}\mathcal{L}_{m}^{0,6}\left(c[m,2]*\frac{i-1}{xn}+c[m,3]*\frac{j-1}{yn}+\cdots+c[m,13]*\frac{i-1}{xn}*\frac{j-1}{yn}*\frac{k-1}{zn}*\frac{k-1}{zn}\right) \Rightarrow d[m,i,j,k]$$

$$\mathcal{L}_{k}^{2,zn-1}\mathcal{L}_{j}^{2,yn-1}\mathcal{L}_{i}^{2,xn-1}\mathcal{L}_{m}^{0,6}\left(u[m,i,j,k]+d[m,i,j,k]\right) \Rightarrow u[m,i,j,k]$$

$$\mathcal{L}_{i}^{2,xn-1}\mathcal{L}_{m}^{0,6}\left(c[m,2]*\frac{i-1}{xn}+c[m,5]*\frac{i-1}{xn}*\frac{i-1}{xn}+\cdots+c[m,11]*\frac{i-1}{xn}*\cdots\right) \Rightarrow tmp1[m,i]$$

similarly for j and k we have $\mathcal{L}_{j}^{2,yn-1}\mathcal{L}_{m}^{0,6}(\cdots) \Rightarrow tmp2[m,j]$ $\mathcal{L}_{k}^{2,zn-1}\mathcal{L}_{m}^{0,6}(\cdots) \Rightarrow tmp3[m,k]$

$$\mathcal{L}_{k}^{2,zn-1}\mathcal{L}_{j}^{2,yn-1}\mathcal{L}_{i}^{2,xn-1}\mathcal{L}_{m}^{0,6}\left(c[m,13]*\frac{i-1}{xn}*\frac{j-1}{yn}*\frac{k-1}{zn}*\frac{k-1}{zn}\right) \Rightarrow tmp3[m,i,j,k]$$

$$\mathcal{L}_{k}^{2,zn-1}\mathcal{L}_{j}^{2,yn-1}\mathcal{L}_{i}^{2,xn-1}\mathcal{L}_{m}^{0,6}\left(u[m,i,j,k]+tmp1[m,i]+tmp2[m,j]+tmp3[m,k]+tmp4[m,i,j,k]\right) \Rightarrow u[m,i,j,k]$$

priv2

$$\mathcal{L}_{i}^{0,N}\mathcal{L}_{j}^{0,N}\Sigma_{k}^{0,N}(a[10*i+j]*a[10*i+j]) \Rightarrow dist[i,j]$$

$$\mathcal{L}_{i}^{0,N}\mathcal{L}_{j}^{0,N}\Sigma_{k}^{0,N}(a[10*i+j]+a[10*i+j]) \Rightarrow dist1[i,j]$$

$$\mathcal{L}_{i}^{0,N}\mathcal{L}_{j}^{0,N} dist[i,j] \Rightarrow b[i,j]$$

$$\mathcal{L}_{i}^{0,N}\mathcal{L}_{j}^{0,N}(dist1[i,j]+b[i,j]) \Rightarrow b[i,j]$$

$$N \Rightarrow tmp1$$

$$\mathcal{L}_{i}^{0,N}\mathcal{L}_{j}^{0,N}(a[10*i+j]+a[10*i+j]) \Rightarrow tmp2[i,j]$$

$$\mathcal{L}_{i}^{0,N}\mathcal{L}_{j}^{0,N} tmp2[i,j]*tmp1 \Rightarrow dist[i,j]$$

$$\mathcal{L}_{i}^{0,N}\mathcal{L}_{j}^{0,N}(a[10*i+j]*a[10*i+j]) \Rightarrow tmp3[i,j]$$

$$\mathcal{L}_{i}^{0,N}\mathcal{L}_{j}^{0,N} tmp3[i,j]*tmp1 \Rightarrow dist1[i,j]$$

ssymm

$$\mathcal{L}_{iter}^{0,itern}\ \mathcal{L}_{i}^{0,NMAX}\ \Sigma_{j}^{0,NMAX}\ \mathcal{L}_{k}^{0,j-1}\ (a[j,k] * b[i,j]) \Rightarrow c[i,k]$$

$$\mathcal{L}_{iter}^{0,itern}\ \mathcal{L}_{i}^{0,NMAX}\ \mathcal{L}_{j}^{0,NMAX}\ \mathcal{L}_{k}^{0,j-1}\ (a[j,j] * b[i,j]) \Rightarrow c[i,j]$$

$$\mathcal{L}_{iter}^{0,itern}\ \mathcal{L}_{i}^{0,NMAX}\ \mathcal{L}_{j}^{0,NMAX}\ (a[j,j] * b[i,j]) \Rightarrow c[i,j]$$

$$\mathcal{L}_{i}^{0,NMAX}\ \Sigma_{i}^{0,NMAX}\ \mathcal{L}_{k}^{0,j-1}\ (a[j,k] * b[i,j] * itern) \Rightarrow c[i,k]$$

$$\mathcal{L}_{i}^{0,NMAX}\ \Sigma_{j}^{0,NMAX}\ (a[j,j] * b[i,j] * itern * (j-1)) \Rightarrow c[i,j]$$

$$\mathcal{L}_{i}^{0,NMAX}\ \Sigma_{j}^{0,NMAX}\ (a[j,j] * b[i,j] * itern) \Rightarrow c[i,j]$$