

COST ANALYSIS OF LOCAL ASSEMBLY (LEFT HAND SIDE)**HELMHOLTZ 2D**

	ORIGINAL	LICM	LICM_AP	SPLIT	TILE	TILE+SPLIT	OP+UAJ
polynomial order							
1	0.164	0.156	0.124	0.121	/	/	/
2	0.17	0.116	0.09	0.093	/	/	0.091
3	0.204	0.121	0.071	0.09	/	/	0.074
4	0.273	0.163	0.066	0.092	0.067	/	0.079

Percentage Reductions					
	w.r.t. ORIGINAL	w.r.t LICM_{AP}		Original/Licm	Original/Licm_ap
polynomial order					
1	26.22%	2.42%	SPLIT1	1.0512820513	1.3225806452
2	47.06%	0.00%		1.4655172414	1.8888888889
3	65.20%	0.00%		1.6859504132	2.8732394366
4	75.82%	0.00%		1.6748466258	4.1363636364

HELMHOLTZ 3D

	ORIGINAL	LICM	LICM_AP	SPLIT	TILE	TILE+SPLIT	OP+UAJ
polynomial order							
1	0.232	0.17	0.171	0.151	/	/	0.157
2	0.651	0.31	0.196	0.212	/	/	0.206
3	0.338	0.128	0.127	0.134	0.128	0.124	0.124
4	0.827	0.365	0.253	0.26	0.238	0.239	0.227

Percentage Reductions					
	w.r.t. ORIGINAL	w.r.t LICM_{AP}		Original/Licm	Original/Licm_ap
polynomial order					
1	34.91%	11.18%	VECT1	1.3647058824	1.3567251462
2	69.89%	0.00%		2.1	3.3214285714
3	63.31%	3.13%	VECT2	2.640625	2.6614173228
4	72.55%	10.28%	VECT2	2.2657534247	3.2687747036

HELMHOLTZ XTR

	ORIGINAL	LICM	LICM_AP	SPLIT	TILE	TILE+SPLIT	OP+UAJ
polynomial order							
1	0.292	0.135	0.111	0.115	/	/	0.11
2	1.19	0.522	0.434	0.444	0.436	0.424	0.406
3	2.496	1.018	1.028	1.103	1	1.074	0.95
4	5.524	2.681	2.008	2.797	1.874	2.46	1.62

Percentage Reductions				Original/Licm	Original/Licm_ap
	w.r.t. ORIGINAL	w.r.t. LICM_{AP}			
polynomial order					
1	62.33%	0.90%		2.162962963	2.6306306306
2	65.88%	6.45%	VECT1	2.2796934866	2.7419354839
3	61.94%	7.59%	VECT2	2.4518664047	2.4280155642
4	70.67%	19.32%	VECT1	2.0604252145	2.7509960159

For the following advection diffusion problem, we consider the assembly cost of the diffusion kernel
ADVDIFF 2D

	ORIGINAL	LICM	LICM_AP	SPLIT	TILE	TILE+SPLIT	OP+UAJ
polynomial order							
1	0.15	0.137	0.109	0.112	/	/	/
2	0.151	0.09	0.076	0.076	/	/	0.076
3	0.181	0.092	0.059	0.071	/	/	0.06
4	0.227	0.138	0.053	0.078	0.053	0.074	0.056

Percentage Reductions				Original/Licm	Original/Licm_ap
	w.r.t. ORIGINAL	w.r.t. LICM_{AP}			
polynomial order					
1	27.33%	0.00%		1.0948905109	1.376146789
2	49.67%	0.00%		1.6777777778	1.9868421053
3	67.40%	0.00%		1.9673913043	3.0677966102

ADVDIFF 3D

4

76.65%

0.00%

1.6449275362

4.2830188679

	ORIGINAL	LICM	LICM_AP	SPLIT	TILE	TILE+SPLIT	OP+UAJ
polynomial order							
1	0.217	0.167	0.153	0.155	/	/	0.146
2	0.597	0.271	0.161	0.191	/	/	0.167
3	0.296	0.095	0.093	0.117	0.094	0.111	0.091
4	0.742	0.285	0.194	0.215	0.19	0.211	0.167

Percentage Reductions					
	w.r.t. ORIGINAL	w.r.t. LICM_{AP}		Original/Licm	Original/Licm_ap
polynomial order					
1	32.72%	4.58%	VECT1	1.2994011976	1.4183006536
2	73.03%	0.00%		2.2029520295	3.7080745342
3	69.26%	2.15%		3.1157894737	3.1827956989
4	77.49%	13.92%	VECT2	2.6035087719	3.824742268

ADVDIFF XTR

	ORIGINAL	LICM	LICM_AP	SPLIT	TILE	TILE+SPLIT	OP+UAJ
polynomial order							
1	0.25	0.116	0.098	0.106	/	/	0.097
2	0.26	0.143	0.083	0.102	0.083	0.096	0.081
3	0.566	0.209	0.207	0.235	0.199	0.228	0.176
4	1.204	0.518	0.448	0.631	0.398	0.563	0.318

Percentage Reductions					
	w.r.t. ORIGINAL	w.r.t. LICM_{AP}		Original/Licm	Original/Licm_ap
polynomial order					
1	61.20%	1.02%	VECT1	2.1551724138	2.5510204082
2	68.85%	2.41%	VECT3	1.8181818182	3.1325301205
3	68.90%	14.98%	VECT3	2.7081339713	2.7342995169

4 73.59% 29.02% VECT3 2.3243243243 2.6875

BURGERS 2D

	ORIGINAL	LICM	LICM_AP	SPLIT	TILE	TILE+SPLIT	OP+UAJ
polynomial order							
1	0.75	0.49	0.48	0.437	/	/	0.467
2	0.273	0.151	0.12	0.113	0.121	0.112	0.12
3	1.5	0.56	0.575	0.567	0.56	0.572	0.595
4	1.87	0.76	0.675	0.61	0.66	0.6	0.64

Percentage Reductions		w.r.t LICM_{AP}		Original/Licm	Original/Licm_ap
polynomial order	w.r.t. ORIGINAL				
1	41.73%	8.96%	SPLIT1	1.5306122449	1.5625
2	58.97%	6.67%	TILE8_SPLIT6	1.8079470199	2.275
3	62.67%	0.00%		2.6785714286	2.6086956522
4	67.91%	11.11%	TILE8_SPLIT6	2.4605263158	2.7703703704

BURGERS 3D

	ORIGINAL	LICM	LICM_AP	SPLIT	TILE	TILE+SPLIT	OP+UAJ
polynomial order							
1	0.121	0.075	0.075	0.069	0.077	0.071	0.11
2	0.65	0.29	0.31	0.238	0.256	0.223	0.247
3	0.93	0.549	0.582	0.501	0.55	0.5	0.55
4	8.52	5.36	4.79	4.445	4.63	4.14	4.46

Percentage Reductions		w.r.t LICM_{AP}		Original/Licm	Original/Licm_ap
polynomial order	w.r.t. ORIGINAL				
1	42.98%	8.00%	SPLIT3	1.6133333333	1.6133333333
2	65.69%	23.10%	TILE16_SPLIT3	2.2413793103	2.0967741935
3	46.24%	8.93%	TILE16_SPLIT9	1.693989071	1.5979381443

4 51.41% 13.57% TILE24_SPLIT9 SPLIT9 1.5895522388 1.7787056367

BURGERS XTR

	ORIGINAL	LICM	LICM_AP	SPLIT	TILE	TILE+SPLIT	OP+UAJ
polynomial order							
1	0.057	0.027	0.026	0.02	0.023	0.02	0.022
2	0.22	0.1	0.095	0.078	0.085	0.077	0.88
3	0.308	0.185	0.188	0.161	0.2	0.166	0.181
4	0.766	0.58	0.54	0.36	0.482	0.388	0.44

Percentage Reductions							
w.r.t. ORIGINAL		w.r.t LICM_{AP}				Original/Licm	Original/Licm_ap
polynomial order							
1	64.91%	23.08%	SPLIT3	FILE12_SPLIT3	2.1111111111	2.1923076923	
2	65.00%	18.95%	SPLIT9	FILE24_SPLIT9	2.2	2.3157894737	
3	47.73%	12.97%	SPLIT9	TILE8_SPLIT9	1.6648648649	1.6382978723	
4	53.00%	33.33%	SPLIT9	TILE8_SPLIT9	1.3206896552	1.4185185185	