

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_{GAIN}	Original/Op_vec	GAIN	
polynomial order							
1	26.22%	2.42%	1.0512820513	1.322580645	0.27129859	#VALUE!	#VALUE!
2	47.06%	0.00%	1.4655172414	1.888888889	0.42337165	1.8681318681	-0.0207570208
3	65.20%	0.00%	1.6859504132	2.873239437	1.18728902	2.7567567568	-0.1164826799
4	75.82%	0.00%	1.6748466258	4.136363636	2.46151701	3.4556962025	-0.6806674338

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_{GAIN}		Original/Op_vecGAIN	
	polynomial order							
VECT1	1	34.91%	11.18%	1.3647058824	1.356725146	-0.0079807	1.4777070064	0.1209818602
	2	69.89%	0.00%	2.1	3.321428571	1.22142857	3.1601941748	-0.1612343967
VECT2	3	63.31%	3.13%	2.640625	2.661417323	0.02079232	2.7258064516	0.0643891288
VECT2	4	72.55%	10.28%	2.2657534247	3.268774704	1.00302128	3.6431718062	0.3743971026

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						
		w.r.t. ORIGINAL	w.r.t LICM_{AP}	Original/Licm	Original/Licm_{GAIN}		Original/Op_vecGAIN	
polynomial order								
VECT1	1	62.33%	0.90%	2.162962963	2.630630631	0.46766767	2.6545454545	0.0239148239
	2	65.88%	6.45%	2.2796934866	2.741935484	0.462242	2.9310344828	0.1890989989
VECT2	3	61.94%	7.59%	2.4518664047	2.428015564	-0.0238508	2.6273684211	0.1993528569
VECT1	4	70.67%	19.32%	2.0604252145	2.750996016	0.6905708	3.4098765432	0.6588805273

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		w.r.t ORIGINAL	w.r.t LICM_{AP}	Original/Licm	Original/Licm_{GAIN}	Origina/Op_vecGAIN		
polynomial order								
1	27.33%	0.00%	1.0948905109	1.376146789	0.28125628	#VALUE!	#VALUE!	
2	49.67%	0.00%	1.6777777778	1.986842105	0.30906433	1.9868421053	0	
3	67.40%	0.00%	1.9673913043	3.06779661	1.10040531	3.0166666667	-0.0511299435	

ADVDIFF 3D

4 76.65% 0.00% 1.6449275362 4.283018868 2.63809133 4.0535714286 -0.2294474394

	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_{GAIN}	Original/Op_vec	GAIN	
VECT1	polynomial order							
	1	32.72%	4.58%	1.2994011976	1.418300654	0.11889946	1.4863013699	0.0680007163
	2	73.03%	0.00%	2.2029520295	3.708074534	1.5051225	3.5748502994	-0.1332242348
VECT2	3	69.26%	2.15%	3.1157894737	3.182795699	0.06700623	3.2527472527	0.0699515538
	4	77.49%	13.92%	2.6035087719	3.824742268	1.2212335	4.4431137725	0.6183715044

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_{GAIN}	Original/Op_vec	GAIN	
VECT1	polynomial order							
	1	61.20%	1.02%	2.1551724138	2.551020408	0.39584799	2.5773195876	0.0262991795
	2	68.85%	2.41%	1.8181818182	3.13253012	1.3143483	3.2098765432	0.0773464227
VECT3	3	68.90%	14.98%	2.7081339713	2.734299517	0.02616555	3.2159090909	0.481609574

VECT3 4 73.59% 29.02% 2.3243243243 2.6875 0.36317568 3.786163522 1.098663522

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		Original/Licm	Original/Licm_{GAIN}	Original/Split	GAIN
		w.r.t. ORIGINAL	w.r.t. LICM_{AP}				
SPLIT1 TILE8_SPLIT6 TILE8_SPLIT6	polynomial order						
	1	41.73%	8.96%	1.5306122449	1.5625 0.03188776	1.7162471396	0.1537471396
	2	58.97%	6.67%	1.8079470199	2.275 0.46705298	2.4159292035	0.1409292035
	3	62.67%	0.00%	2.6785714286	2.608695652 -0.0698758	2.6455026455	0.0368069933
BURGERS 3D	4	67.91%	11.11%	2.4605263158	2.77037037 0.30984405	3.0655737705	0.2952034001

	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		Original/Licm	Original/Licm_{GAIN}	Original/Split	GAIN
		w.r.t. ORIGINAL	w.r.t. LICM_{AP}				
SPLIT3 SPLIT9	polynomial order						
	1	42.98%	8.00%	1.6133333333	1.613333333 0	1.7536231884	0.1402898551
	2	65.69%	23.10%	2.2413793103	2.096774194 -0.1446051	2.731092437	0.6343182434
	3	46.24%	8.93%	1.693989071	1.597938144 -0.0960509	1.8562874251	0.2583492808

Sheet1

SPLIT9	4	51.41%	13.57%	1.5895522388	1.778705637	0.1891534	1.9167604049	0.1380547682
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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_{GAIN}	Original/Split	GAIN
SPLIT3 SPLIT9 SPLIT9 SPLIT9	polynomial order						
	1	64.91%	23.08%	2.1111111111	2.192307692	0.08119658	2.85
	2	65.00%	18.95%	2.2	2.315789474	0.11578947	2.8205128205
	3	47.73%	12.97%	1.6648648649	1.638297872	-0.026567	1.9130434783
	4	53.00%	33.33%	1.3206896552	1.418518519	0.09782886	2.1277777778