

Relatório referente a Otimização do tamanho da FFT para Grade Regular

GRADE REGULAR

ProgInfo dos testes com a nova chamada da FFT

Conclusão: O ganho de memória foi de aproximadamente 20% para todas as resoluções testadas.

Com esse ganho foi possível executar o modelo T341L64 com 1 processador, a versão original não executava por falta de memória

Há reprodutibilidade binária com a variação do tamanho do bloco em todas as resoluções testadas.

O tamanho do bloco ideal para todas as resoluções é 512, devendo ser inserido e definido no MODELIN.

Houve um aumento no tempo de execução em função do *overhead* da nova chamada por blocos da FFT.

Obs: O tempo de execucao é referente a 1 hora de previsão somente

run1Ampi_01h_T126L28	Original	256Block	512Block	768Block	Ganho Nova chamada FFT
Real Time (sec) :	60,785485	59,904557	59,862058	59,15592	
User Time (sec) :	48,97055	49,089652	49,044524	49,057334	
System Time (sec) :	3,575001	3,594551	3,563586	3,655195	
Vector Time (sec) :	43,7028	43,776411	43,757493	43,760705	
Instruction Count :	4676633506	4838625720	4757462710	4730115957	
Vector Instruction Count :	1666656083	1667113569	1666884354	1666807123	
Vector Element Count :	3,16478E+11	3,1651E+11	3,16494E+11	3,16489E+11	
FLOP Count :	1,40157E+11	1,40157E+11	1,40157E+11	1,40157E+11	
MOPS :	6524,079868	6512,204601	6516,214093	6513,8447	
MFLOPS :	2862,067812	2855,125179	2857,751624	2857,00517	
Average Vector Length :	189,887887	189,855299	189,871624	189,877126	
Vector Operation Ratio (%) :	99,057874	99,007916	99,032939	99,041373	
Memory size used (MB) :	1943,222122	1575,222122	1575,222122	1575,222122	18,94%
Global Memory size used (MB):	16	16	16	16	
MIPS :	95,498897	98,567122	97,002934	96,420159	
Instruction Cache miss (sec):	1,205542	1,209205	1,205612	1,213769	
Operand Cache miss (sec):	0,963407	0,98104	0,969696	0,978198	
Bank Conflict Time (sec):	0,68948	0,689883	0,689696	0,689619	

run1Ampi_01h_T170L42	Original	256Block	512Block	768Block	
Real Time (sec) :	161,35675	164,207798	166,139109	168,627568	
User Time (sec) :	141,751777	142,377186	141,96635	142,252138	
System Time (sec) :	7,300367	7,392284	7,21263	7,264278	
Vector Time (sec) :	132,012351	132,4565	132,185171	132,404093	
Instruction Count :	11208416396	11648920681	11428437801	11354550081	
Vector Instruction Count :	4516228287	4517309619	4516768386	4516587009	
Vector Element Count :	1,03069E+12	1,03077E+12	1,03073E+12	1,03072E+12	
FLOP Count :	4,73327E+11	4,73327E+11	4,73327E+11	4,73327E+11	
MOPS :	7318,301523	7289,777669	7309,055055	7293,762805	
MFLOPS :	3339,122831	3324,456366	3334,07648	3327,378066	
Average Vector Length :	228,219211	228,181486	228,200366	228,206694	
Vector Operation Ratio (%) :	99,354897	99,312879	99,333905	99,340953	
Memory size used (MB) :	4782,206497	3790,206497	3790,206497	3790,206497	20,74%
Global Memory size used (MB):	16	16	16	16	
MIPS :	79,070729	81,817326	80,501033	79,819891	
Instruction Cache miss (sec):	1,778604	1,78753	1,77767	1,77935	
Operand Cache miss (sec):	2,215723	2,303357	2,232436	2,274445	
Bank Conflict Time (sec):	1,954105	1,959143	1,958382	1,957978	

run1Ampi_01h_T213L42	Original	256Block	512Block	768Block	
Real Time (sec) :	268,241622	267,605405	270,315485	267,118497	
User Time (sec) :	239,363239	239,835475	239,724462	239,671122	
System Time (sec) :	8,755193	8,631529	8,682832	8,649342	
Vector Time (sec) :	224,007752	224,356312	224,283775	224,258108	
Instruction Count :	19883690206	20623746948	20252966888	20129509213	
Vector Instruction Count :	8628337016	8629824950	8629079471	8628831251	
Vector Element Count :	1,78984E+12	1,78995E+12	1,7899E+12	1,78988E+12	
FLOP Count :	8,36273E+11	8,36273E+11	8,36273E+11	8,36273E+11	
MOPS :	7524,533904	7513,270854	7514,969332	7516,048742	
MFLOPS :	3493,738926	3486,8606	3488,474892	3489,251128	
Average Vector Length :	207,437592	207,414979	207,426308	207,43008	
Vector Operation Ratio (%) :	99,375083	99,334392	99,354774	99,361563	
Memory size used (MB) :	7608,065872	6040,065872	6040,065872	6040,065872	20,61%
Global Memory size used (MB):	16	16	16	16	
MIPS :	83,069106	85,991228	84,484356	83,988046	
Instruction Cache miss (sec):	2,392136	2,389721	2,398503	2,394989	
Operand Cache miss (sec):	3,831716	3,866175	3,858609	3,847963	
Bank Conflict Time (sec):	1,943186	1,948464	1,944117	1,943308	

run1Empi_01h_T254L64	Original	256Block	512Block	768Block	
Real Time (sec) :	3522,553528	3540,913142	3525,934811	3532,252047	
User Time (sec) :	3476,107084	3476,548071	3475,621599	3476,341567	
System Time (sec) :	17,979592	17,526606	17,947276	18,258875	
Vector Time (sec) :	3353,203244	3353,433435	3352,782467	3353,189706	
Instruction Count :	2,23161E+11	2,25404E+11	2,24281E+11	2,23906E+11	
Vector Instruction Count :	1,11787E+11	1,1179E+11	1,11788E+11	1,11788E+11	
Vector Element Count :	2,8008E+13	2,80083E+13	2,80082E+13	2,80081E+13	
FLOP Count :	1,35191E+13	1,35191E+13	1,35191E+13	1,35191E+13	
MOPS :	8089,327635	8089,039522	8090,826126	8089,027394	
MFLOPS :	3889,161678	3888,668496	3889,704999	3888,899398	
Average Vector Length :	250,548711	250,544046	250,546382	250,54716	
Vector Operation Ratio (%) :	99,603924	99,595996	99,599966	99,601288	
Memory size used (MB) :	16159,25337	12799,25337	12799,25337	12799,25337	20,79%
Global Memory size used (MB):	16	16	16	16	
MIPS :	64,198451	64,835484	64,529618	64,408652	
Instruction Cache miss (sec):	3,927585	3,904037	3,964829	4,002011	
Operand Cache miss (sec):	7,643349	7,691893	7,543965	7,727676	
Bank Conflict Time (sec):	19,694845	19,701437	19,706312	19,701854	

run1Empi_01h_T341L64	Original	256Block	512Block
Real Time (sec) :	0	6613,745137	6557,358398
User Time (sec) :	0	6496,785285	6481,910519
System Time (sec) :	0	23,500492	22,928487
Vector Time (sec) :	0	6270,049887	6255,602319
Instruction Count :	0	4,18783E+11	4,16241E+11
Vector Instruction Count :	0	2,10321E+11	2,10318E+11
Vector Element Count :	0	5,22106E+13	5,22103E+13
FLOP Count :	0	2,53368E+13	2,53368E+13
MOPS :	0	8068,465978	8086,540096
MFLOPS :	0	3899,898916	3908,848383
Average Vector Length :	0	248,242144	248,244342
Vector Operation Ratio (%) :	0	99,602318	99,607139
Memory size used (MB) :	0	24138,82713	24138,82713
Global Memory size used (MB):	0	16	16
MIPS :	0	64,459982	64,215825
Instruction Cache miss (sec):	0	6,431031	6,330293
Operand Cache miss (sec):	0	19,400788	19,188591
Bank Conflict Time (sec):	0	43,673736	43,37249

Ganhou muito
O original nao rodava