Compiler Project

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Contents

1. ROOT

1.1. ROOT::TGeoArb8(…)

Table 1: ROOT::TGeoArb8 in Itanium 2 architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	23.913 (100.0%)	24.144 (100.9%)	19.103 (79.80%)	21.107 (88.20%)	8.9508 (37.40%)	14.051 (58.70%)
-O3	23.211 (100.0%)	23.195 (99.90%)	20.539 (88.40%)	9.0506 (38.90%)	14.117 (60.80%)	7.8834 (33.90%)
-O2 + -ipo					18.634 (100.0%)	64.472 (345.9%)
-O2 + -finline-functions	24.445 (100.0%)	22.794 (93.20%)	20.538 (84.00%)	20.325 (83.10%)	18.635 (76.20%)	14.062 (57.50%)

Table 2: ROOT::TGeoArb8 in Xeon architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	5.62 (100.0%)	10.63 (189.1%)	11.77 (209.4%)	11.7 (208.1%)	5.38 (95.70%)	5.52 (98.20%)
-O3	5.69 (100.0%)	8.11 (142.5%)	11.78 (207.0%)	5.82 (102.2%)	5.39 (94.70%)	5.52 (97.00%)
-O2 + -ipo					5.21 (100.0%)	5.2 (99.80%)
-O2 + -finline-functions	5.62 (100.0%)	10.59 (188.4%)	11.78 (209.6%)	11.65 (207.2%)	5.22 (92.80%)	5.53 (98.30%)

1.2. ROOT::TGeoCone(. . .)

Table 3: ROOT::TGeoCone in Itanium 2 architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	32.226 (100.0%)	31.224 (96.80%)	25.198 (78.10%)	27.051 (83.90%)	23.542 (73.00%)	23.195 (71.90%)
-O3	29.202 (100.0%)	31.224 (106.9%)	25.211 (86.30%)	27.05 (92.60%)	20.203 (69.10%)	19.203 (65.70%)
-O2 + -ipo					23.195 (100.0%)	22.193 (95.60%)
-O2 + -finline-functions	32.561 (100.0%)	31.892 (97.90%)	25.197 (77.30%)	26.699 (81.90%)	22.193 (68.10%)	22.194 (68.10%)

Table 4: ROOT::TGeoCone in Xeon architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	9.21 (100.0%)	13.66 (148.3%)	13.59 (147.5%)	11.76 (127.6%)	10.16 (110.3%)	10.23 (111.0%)
-O3	9.38 (100.0%)	11.99 (127.8%)	13.92 (148.4%)	11.76 (125.3%)	10.15 (108.2%)	10.23 (109.0%)
-O2 + -ipo					10.15 (100.0%)	10.22 (100.6%)
-O2 + -finline-functions	9.28 (100.0%)	13.66 (147.1%)	13.57 (146.2%)	11.77 (126.8%)	10.14 (109.2%)	10.28 (110.7%)

1.3. ROOT::TRandom(...)

Table 5: ROOT::TRandom in Itanium 2 architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	22.525 (100.0%)	22.632 (100.4%)	22.565 (100.1%)	35.115 (155.8%)	28.707 (127.4%)	22.369 (99.30%)
-O3	22.421 (100.0%)	22.605 (100.8%)	22.531 (100.4%)	22.59 (100.7%)	31.85 (142.0%)	22.364 (99.70%)
-O2 + -ipo					28.701 (100.0%)	22.368 (77.90%)
-O2 + -finline-functions	22.55 (100.0%)	22.632 (100.3%)	22.532 (99.90%)	22.59 (100.1%)	28.691 (127.2%)	22.354 (99.10%)

Table 6: ROOT::TRandom in Xeon architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	35.28 (100.0%)	46.05 (130.5%)	46.92 (132.9%)	45.13 (127.9%)	34.9 (98.90%)	34.32 (97.20%)
-O3	35.18 (100.0%)	45.12 (128.2%)	45.86 (130.3%)	46.3 (131.6%)	34.22 (97.20%)	35.64 (101.3%)
-O2 + -ipo					34.49 (100.0%)	34.65 (100.4%)
-O2 + -finline-functions	35.79 (100.0%)	45.13 (126.0%)	45.18 (126.2%)	45.78 (127.9%)	34.53 (96.40%)	33.47 (93.50%)

1.4. ROOT::TRandom3(...)

Table 7: ROOT::TRandom3 in Itanium 2 architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	16.914 (100.0%)	17.294 (102.2%)	17.592 (104.0%)	17.248 (101.9%)	12.927 (76.40%)	13.811 (81.60%)
-O3	16.923 (100.0%)	17.296 (102.2%)	17.592 (103.9%)	17.264 (102.0%)	13.138 (77.60%)	13.381 (79.00%)
-O2 + -ipo					13.251 (100.0%)	13.706 (103.4%)
-O2 + -finline-functions	16.926 (100.0%)	17.282 (102.1%)	17.592 (103.9%)	17.247 (101.8%)	12.918 (76.30%)	13.794 (81.40%)

Table 8: ROOT::TRandom3 in Xeon architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	7.05 (100.0%)	6.93 (98.20%)	7.07 (100.2%)	7.16 (101.5%)	6.61 (93.70%)	7.46 (105.8%)
-O3	7.07 (100.0%)	6.92 (97.80%)	7.07 (100.0%)	7.17 (101.4%)	7.47 (105.6%)	7.46 (105.5%)
-O2 + -ipo					6.62 (100.0%)	7.49 (113.1%)
-O2 + -finline-functions	7.05 (100.0%)	6.93 (98.20%)	7.06 (100.1%)	7.14 (101.2%)	6.62 (93.90%)	7.45 (105.6%)

2. GEANT4

2.1. GEANT4::G4AffineTransform(…)

Table 9: GEANT4::G4AffineTransform in Itanium 2 architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	11.154 (100.0%)	11.154 (100.0%)	10.888 (97.60%)	10.887 (97.60%)	14.56 (130.5%)	14.551 (130.4%)
-O3	11.155 (100.0%)	11.154 (99.90%)	10.88 (97.50%)	10.887 (97.50%)	14.551 (130.4%)	14.555 (130.4%)
-O2 + -ipo					14.56 (100.0%)	14.56 (100.0%)
-O2 + -finline-functions	11.155 (100.0%)	11.153 (99.90%)	10.88 (97.50%)	10.887 (97.50%)	14.559 (130.5%)	14.561 (130.5%)

Table 10: GEANT4::G4AffineTransform in Xeon architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	3.05 (100.0%)	7.31 (239.6%)	12.49 (409.5%)	10.15 (332.7%)	3.71 (121.6%)	3.65 (119.6%)
-O3	3.12 (100.0%)	5.69 (182.3%)	12.48 (400.0%)	10.15 (325.3%)	3.71 (118.9%)	3.66 (117.3%)
-O2 + -ipo					3.71 (100.0%)	3.65 (98.30%)
-O2 + -finline-functions	3.05 (100.0%)	7.3 (239.3%)	12.49 (409.5%)	10.15 (332.7%)	3.71 (121.6%)	3.65 (119.6%)

2.2. GEANT4::G4Mag(…)

Table 11: GEANT4::G4Mag in Itanium 2 architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	29.555 (100.0%)	28.854 (97.60%)	23.009 (77.80%)	23.044 (77.90%)	9.4198 (31.80%)	8.8128 (29.80%)
-O3	23.945 (100.0%)	23.676 (98.80%)	22.843 (95.30%)	17.723 (74.00%)	8.4178 (35.10%)	7.8164 (32.60%)
-O2 + -ipo					8.3829 (100.0%)	8.1782 (97.50%)
-O2 + -finline-functions	24.364 (100.0%)	24.063 (98.70%)	22.844 (93.70%)	17.733 (72.70%)	8.3826 (34.40%)	8.8126 (36.10%)

Table 12: GEANT4::G4Mag in Xeon architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	8.96 (100.0%)	12.74 (142.1%)	12.43 (138.7%)	12.7 (141.7%)	9.41 (105.0%)	9.08 (101.3%)
-O3	8.18 (100.0%)	9.21 (112.5%)	12.42 (151.8%)	12.39 (151.4%)	9.4 (114.9%)	9.09 (111.1%)
-O2 + -ipo					9.1 (100.0%)	9.09 (99.80%)
-O2 + -finline-functions	8.81 (100.0%)	12.2 (138.4%)	12.41 (140.8%)	12.42 (140.9%)	9.09 (103.1%)	9.09 (103.1%)

2.3. GEANT4::G4Tubs(…)

Table 13: GEANT4::G4Tubs in Itanium 2 architecture (if we don't use the return)

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	25.713 (100.0%)	26.701 (103.8%)	26.716 (103.9%)	27.049 (105.1%)	26.049 (101.3%)	0.44509 (1.700%)
-O3	24.378 (100.0%)	27.048 (110.9%)	26.699 (109.5%)	27.7 (113.6%)	26.032 (106.7%)	0.4452 (1.800%)
-O2 + -ipo					0.44503 (100.0%)	0.44554 (100.1%)
-O2 + -finline-functions	25.031 (100.0%)	26.716 (106.7%)	26.715 (106.7%)	27.716 (110.7%)	0.44527 (1.700%)	0.44531 (1.700%)

Table 14: GEANT4::G4Tubs in Itanium 2 architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	20.358 (100.0%)	22.375 (109.9%)	24.043 (118.1%)	23.877 (117.2%)	26.548 (130.4%)	27.534 (135.2%)
-O3	19.869 (100.0%)	22.194 (111.7%)	24.044 (121.0%)	23.878 (120.1%)	26.533 (133.5%)	26.55 (133.6%)
-O2 + -ipo					26.548 (100.0%)	26.55 (100.0%)
-O2 + -finline-functions	20.37 (100.0%)	22.361 (109.7%)	23.71 (116.3%)	23.863 (117.1%)	26.549 (130.3%)	27.552 (135.2%)

Table 15: GEANT4::G4Tubs in Xeon architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	6.71 (100.0%)	8.56 (127.5%)	9.03 (134.5%)	8.16 (121.6%)	7.34 (109.3%)	4.82 (71.80%)
-O3	6.86 (100.0%)	9.07 (132.2%)	9.03 (131.6%)	8.19 (119.3%)	7.34 (106.9%)	4.83 (70.40%)
-O2 + -ipo					7.35 (100.0%)	4.82 (65.50%)
-O2 + -finline-functions	6.68 (100.0%)	8.51 (127.3%)	9.05 (135.4%)	8.18 (122.4%)	7.36 (110.1%)	4.83 (72.30%)

3. CLHEP

3.1. HepMatrix::invertHaywood5(...)

Table 16: HepMatrix::invertHaywood5 in Itanium 2 architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	3.8455 (100.0%)	3.5846 (93.20%)	2.9668 (77.10%)	2.8597 (74.30%)	32.793 (852.7%)	2.9509 (76.70%)
-O3	3.6318 (100.0%)	3.6986 (101.8%)	2.9665 (81.60%)	2.8613 (78.70%)	32.581 (897.1%)	2.8469 (78.30%)
-O2 + -ipo					35.838 (100.0%)	35.479 (98.90%)
-O2 + -finline-functions	3.9008 (100.0%)	3.5808 (91.70%)	2.9659 (76.00%)	2.86 (73.30%)	35.962 (921.9%)	2.9508 (75.60%)

Table 17: HepMatrix::invertHaywood5 in Xeon architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	5.22 (100.0%)	16.21 (310.5%)	18.83 (360.7%)	20.67 (395.9%)	4.37 (83.70%)	4.44 (85.00%)
-O3	4.84 (100.0%)	9.13 (188.6%)	18.89 (390.2%)	20.62 (426.0%)	4.4 (90.90%)	4.43 (91.50%)
-O2 + -ipo					23.18 (100.0%)	22.1 (95.30%)
-O2 + -finline-functions	5.25 (100.0%)	16.22 (308.9%)	18.85 (359.0%)	20.68 (393.9%)	4.41 (84.00%)	4.46 (84.90%)

3.2. RanluxEngine::flat(…)

Table 18: RanluxEngine::flat in Itanium 2 architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	55.393 (100.0%)	54.298 (98.00%)	51.948 (93.70%)	51.982 (93.80%)	23.13 (41.70%)	17.413 (31.40%)
-O3	54.042 (100.0%)	46.981 (86.90%)	51.843 (95.90%)	51.841 (95.90%)	19.781 (36.60%)	13.779 (25.40%)
-O2 + -ipo					22.303 (100.0%)	22.305 (100.0%)
-O2 + -finline-functions	55.392 (100.0%)	52.723 (95.10%)	51.843 (93.50%)	51.812 (93.50%)	22.42 (40.40%)	17.414 (31.40%)

Table 19: RanluxEngine::flat in Xeon architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	30.28 (100.0%)	36.87 (121.7%)	28.34 (93.50%)	27.93 (92.20%)	38.37 (126.7%)	33.53 (110.7%)
-O3	30.17 (100.0%)	36.07 (119.5%)	28.45 (94.20%)	27.06 (89.60%)	38.39 (127.2%)	34.26 (113.5%)
-O2 + -ipo					37.5 (100.0%)	33.72 (89.90%)
-O2 + -finline-functions	30.09 (100.0%)	35.87 (119.2%)	28.03 (93.10%)	27.05 (89.80%)	37.68 (125.2%)	34 (112.9%)

3.3. HepRotation::Rotate(...)

Table 20: HepRotation::Rotate in Itanium 2 architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	32.396 (100.0%)	32.526 (100.4%)	32.527 (100.4%)	32.66 (100.8%)	14.018 (43.20%)	13.826 (42.60%)
-O3	30.59 (100.0%)	29.986 (98.00%)	29.722 (97.10%)	29.636 (96.80%)	14.018 (45.80%)	13.817 (45.10%)
-O2 + -ipo					2.338 (100.0%)	2.0025 (85.60%)
-O2 + -finline-functions	30.704 (100.0%)	29.853 (97.20%)	29.722 (96.80%)	29.654 (96.50%)	2.136 (6.900%)	13.827 (45.00%)

Table 21: HepRotation::Rotate in Xeon architecture

	gcc 3.2.3	gcc 3.4.4	gcc 4.0.1	gcc 4.1.0	icc 8.1	icc 9.0
-O2	65.39 (100.0%)	73.87 (112.9%)	73.88 (112.9%)	74.65 (114.1%)	49.75 (76.00%)	20.34 (31.10%)
-O3	64.82 (100.0%)	73.72 (113.7%)	77.13 (118.9%)	77.24 (119.1%)	49.81 (76.80%)	20.38 (31.40%)
-O2 + -ipo					17.75 (100.0%)	20.36 (114.7%)
-O2 + -finline-functions	64.76 (100.0%)	76.97 (118.8%)	77.14 (119.1%)	77.24 (119.2%)	17.68 (27.30%)	20.4 (31.50%)