TABLE 4 – SUMMARY OF PARAMETERS FOR STUDY CASES

Case	σ^*_0	s_B/λ_{RF}	$N_\pm$	ε_0	τ_+/τ_-	$\mathcal{L}_0$ [10^{33}]	$\mathcal{L}$ [10^{33}]	ξ_0	# slices	# turns	# S-part.
0A	nom	2	nom	nom	4400/5014	3	~ 2.6	0.03	3	15000	128
0B	nom	2	5/3 × nom	nom	4400/5014	8.33	~ 3	0.05	3	15000	128
1A	nom	2	nom	nom	4400/5014	3	~ 2.6	0.03	3	15000	256
1A2	nom	2	nom	nom	5014/5014	3	~ 2.6	0.03	3	15000	256
1B	nom	2	5/3 × nom	nom	4400/5014	8.33	~ 5.3	0.05	3	15000	128
1B2	nom	2	5/3 × nom	nom	4400/5014	8.33	~ 5.3	0.05	3	15000	256
2A	$\sqrt{3/2}$ × nom	3	3/2 × nom	3/2 × nom	4400/5014	3	~ 2.7	0.03	3	15000	128
2A2	$\sqrt{3/2}$ × nom	3	3/2 × nom	3/2 × nom	4400/5014	3	~ 2.7	0.03	3	15000	256
2B	$\sqrt{3/2}$ × nom	3	5/2 × nom	3/2 × nom	4400/5014	8.33	~ 6.5	0.05	3	15000	256
3A	nom	3	nom	nom	4400/5014	2	~ 1.9	0.03	3	15000	256
3B	nom	3	5/3 × nom	nom	4400/5014	5.56	~ 4.4	0.05	3	15000	256
5A	nom	2	nom	nom	10028/5014	3	~ 2.7	0.03	3	30000	256
6A	nom	2	nom	nom	5014/5014	3	~ 2.6	0.03	5	25000	256
6B	nom	2	5/3 × nom	nom	5014/5014	8.33	~ 5.3	0.05	5	25000	256

Notes:
- "nom" means nominal, *i.e.*, the value corresponding to case 1A (the numerical value is listed in Table 1A).
- σ^*_0 denotes the set of the four nominal rms beam sizes at the IP.
- s_B/λ_{RF} is the bunch spacing in units of the RF wavelength, $\lambda_{RF} = 0.6298$ m.
- $\mathcal{L}_0$ and $\mathcal{L}$ are the nominal and dynamical luminosities, respectively, in units of 10^{33} cm^{-2} s^{-1}.
- # slices is the number of slices into which the bunch is divided up longitudinally in the simulations.
- # turns is the number of turns for which the simulation is run.
- # S-part. is the number of superparticles used in the simulation.

J. R. Eden and M. A. Furman, "Assessment of the Beam-Beam Effect for Various Operating Scenarios in APIARY 6.3D," ABC 62, ESG Tech Note 186, May 1992

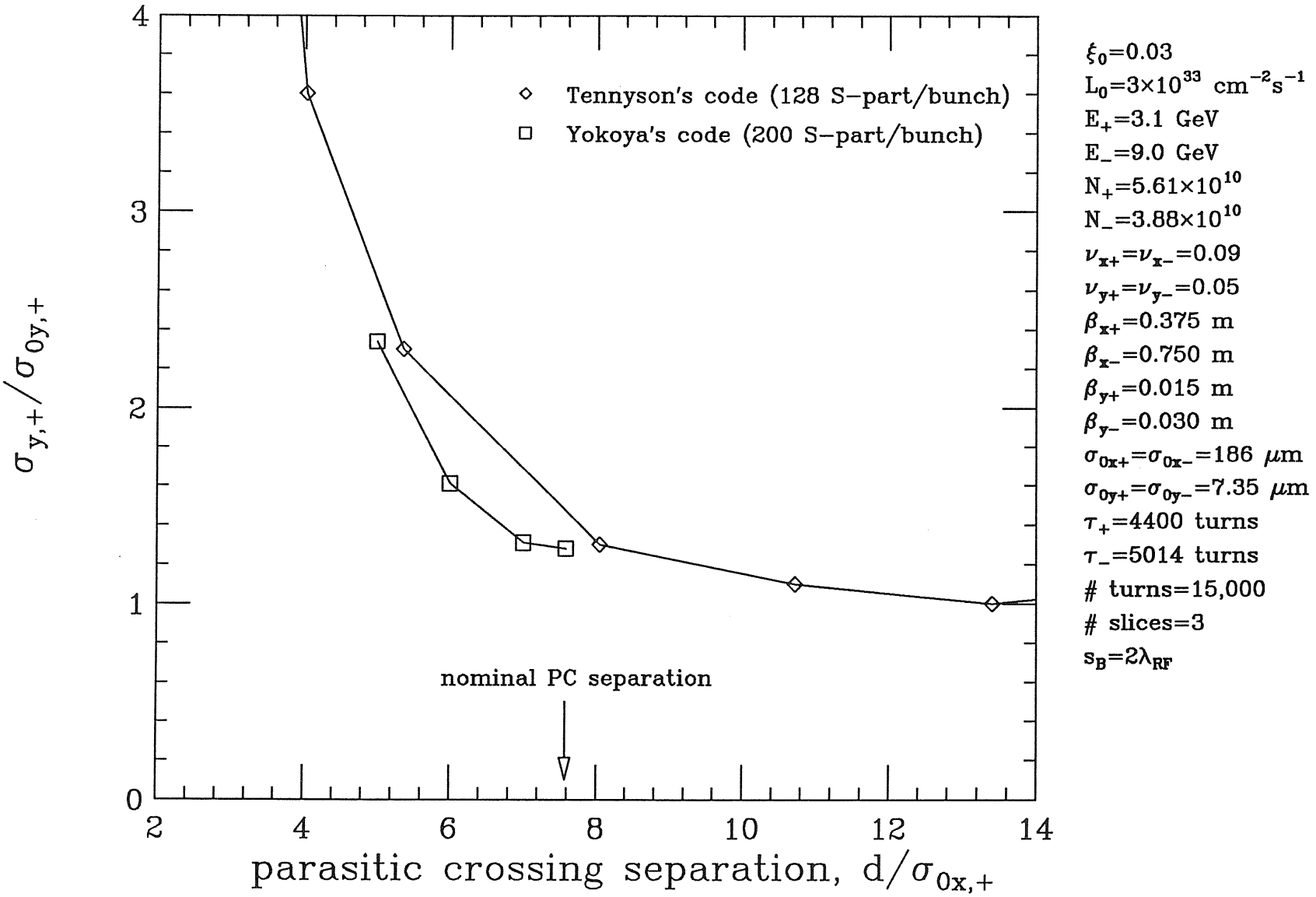

Fig. 1. This figure replaces Fig. 4–91(a) of the CDR, which has been corrected for an error.

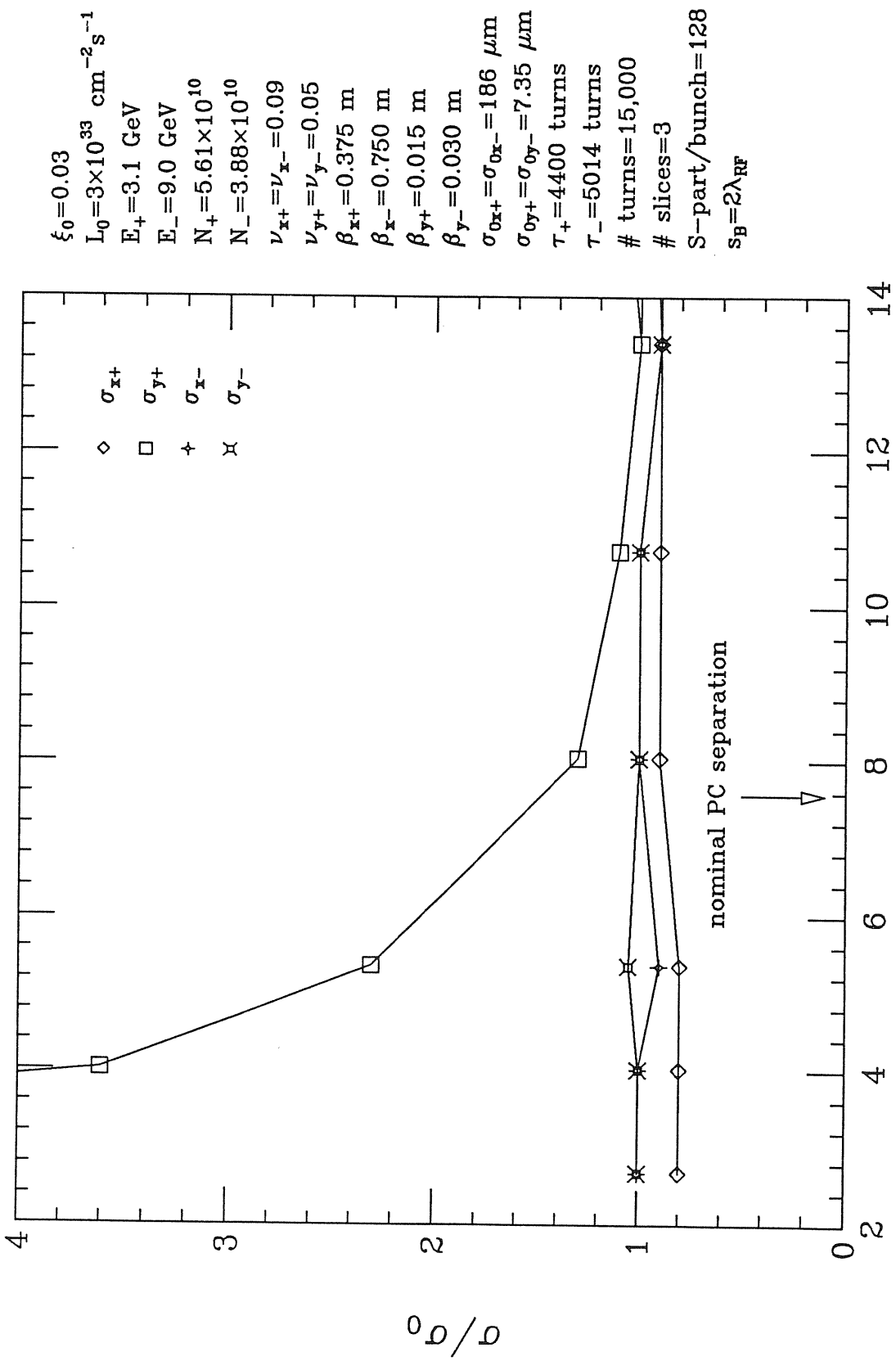

Fig. 2. Case 0A. This is the same as the previous case, except that all four blowup factors are shown (Tennyson's code only).

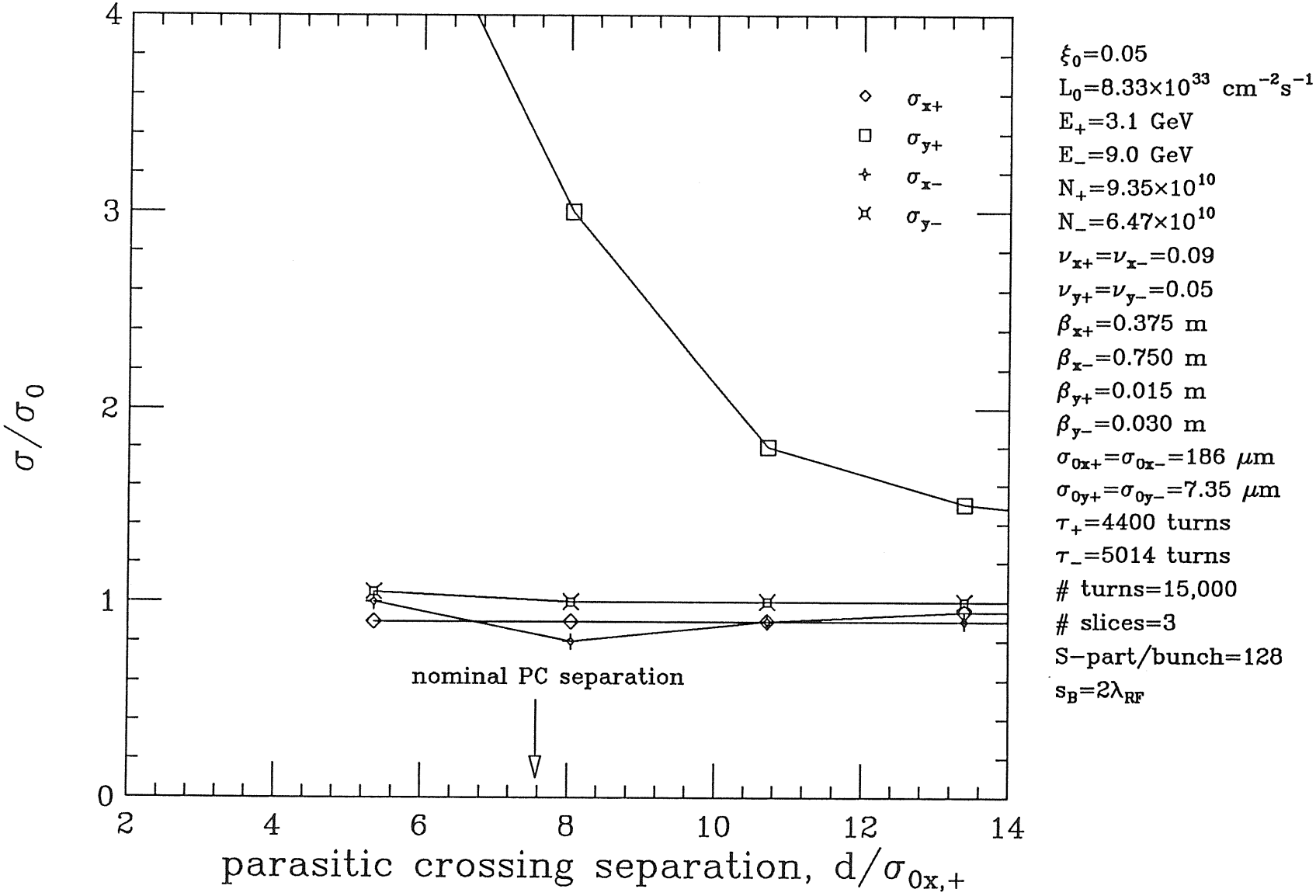

Fig. 3. Case 0B. Same as case 0A except that N_+ and N_- are a factor of 5/3 times larger.

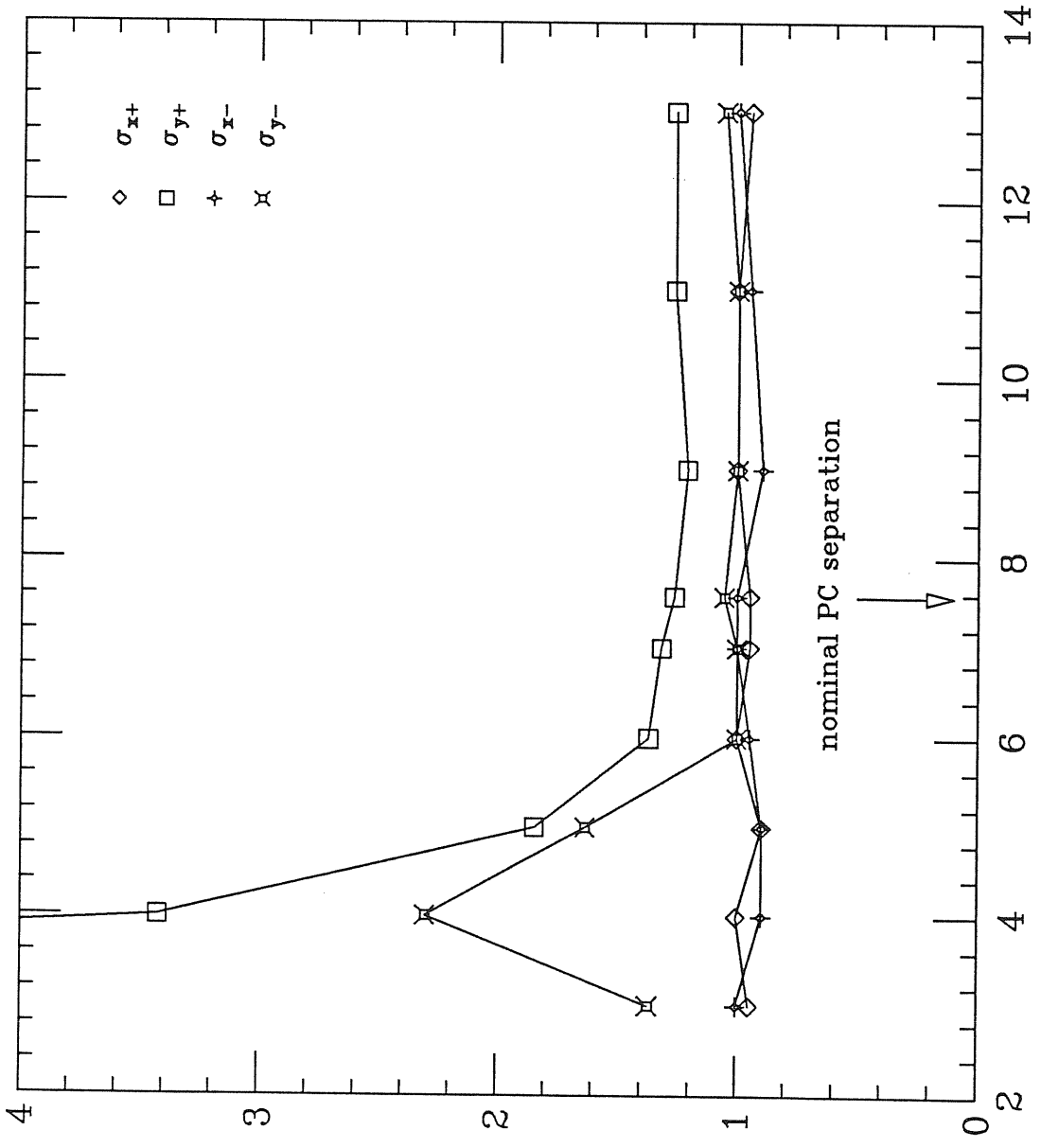

Fig. 4. Case 1A. This is the nominal case for the "new" working point, (0.64,0.57).

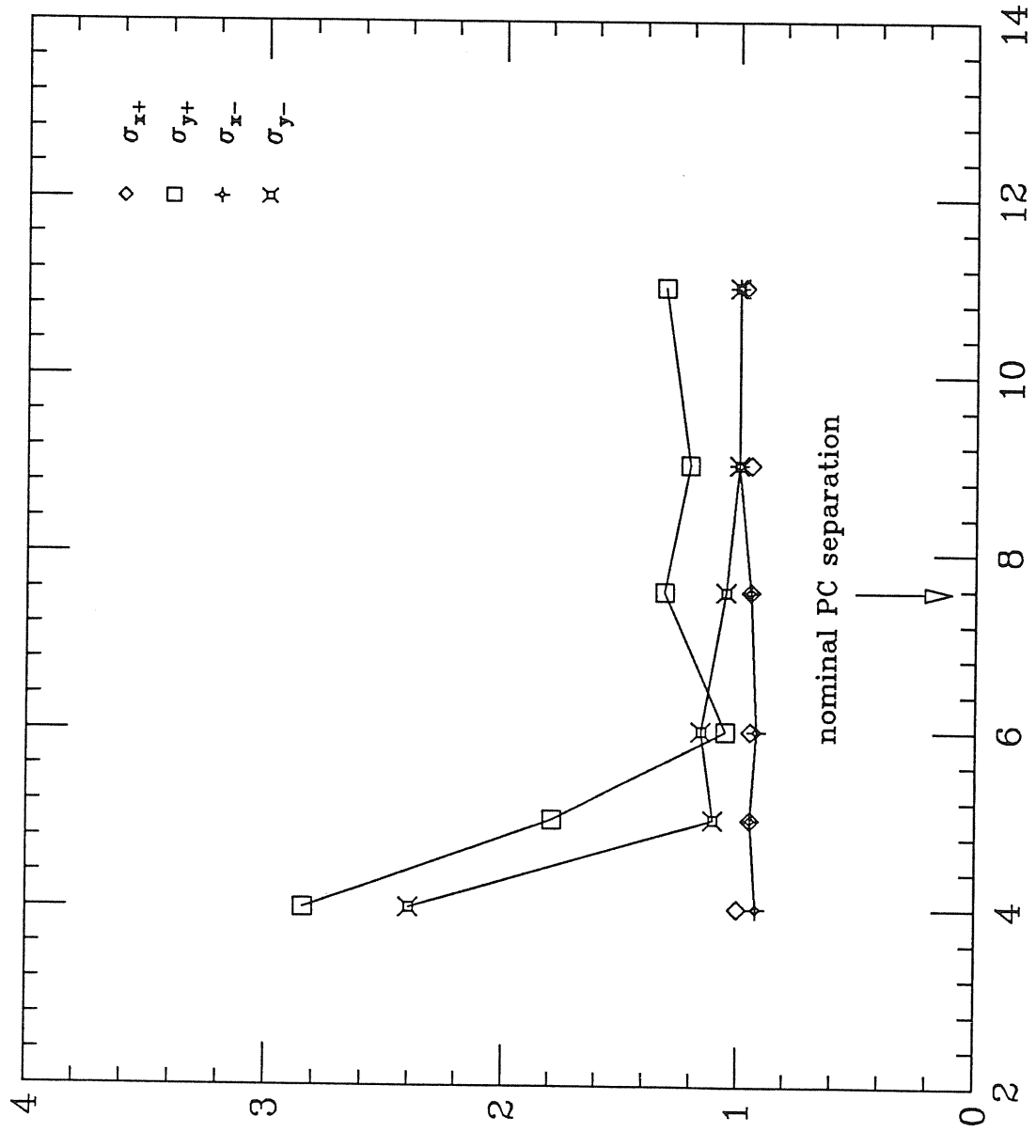

Fig. 5. Case 1A2. Same as 1A except that τ_+=5014 turns instead of 4400 turns.

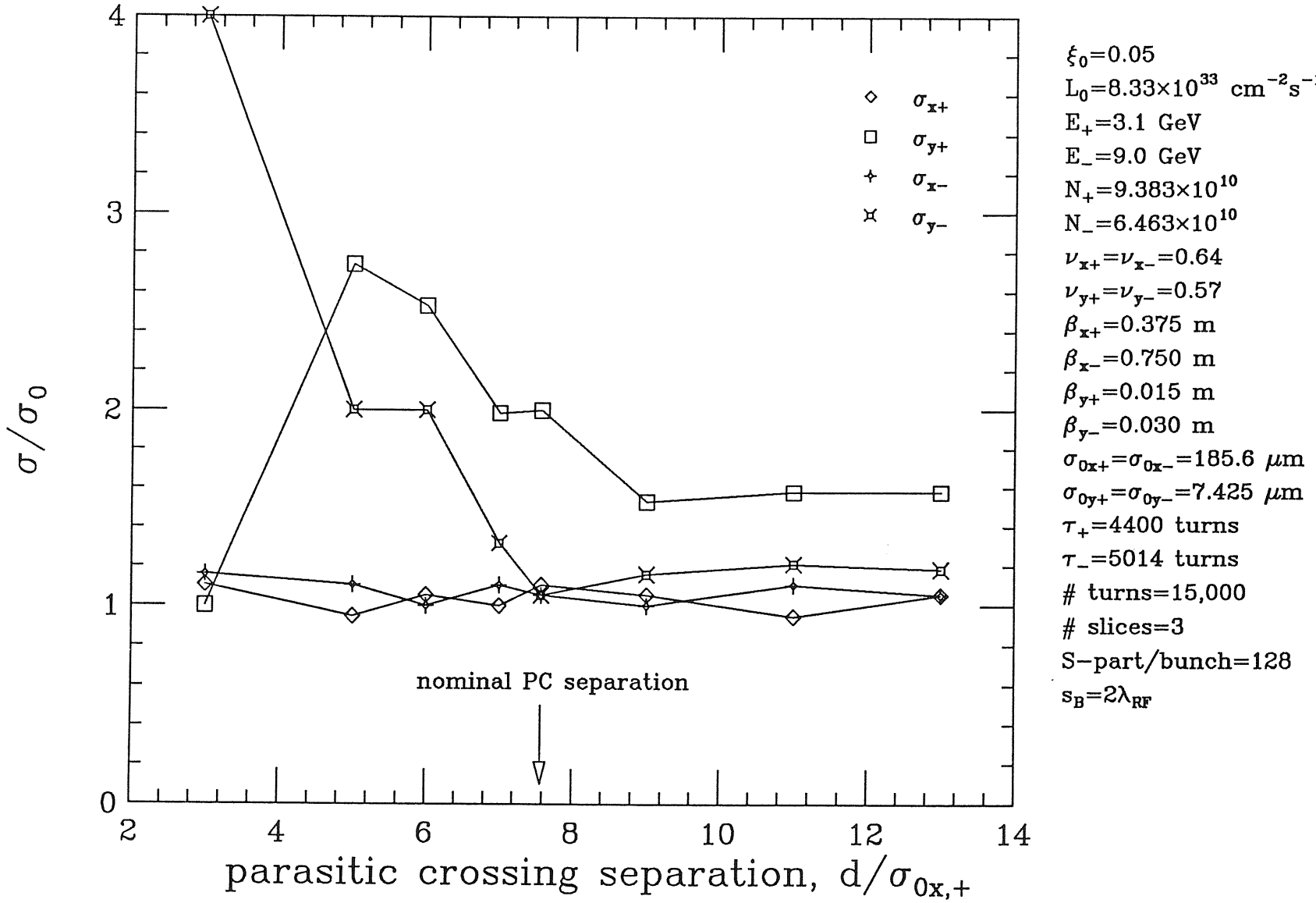

Fig. 6. Case 1B. Same as 1A except that N_+ and N_- are a factor of 5/3 times larger and the number of super-particles/bunch = 128.

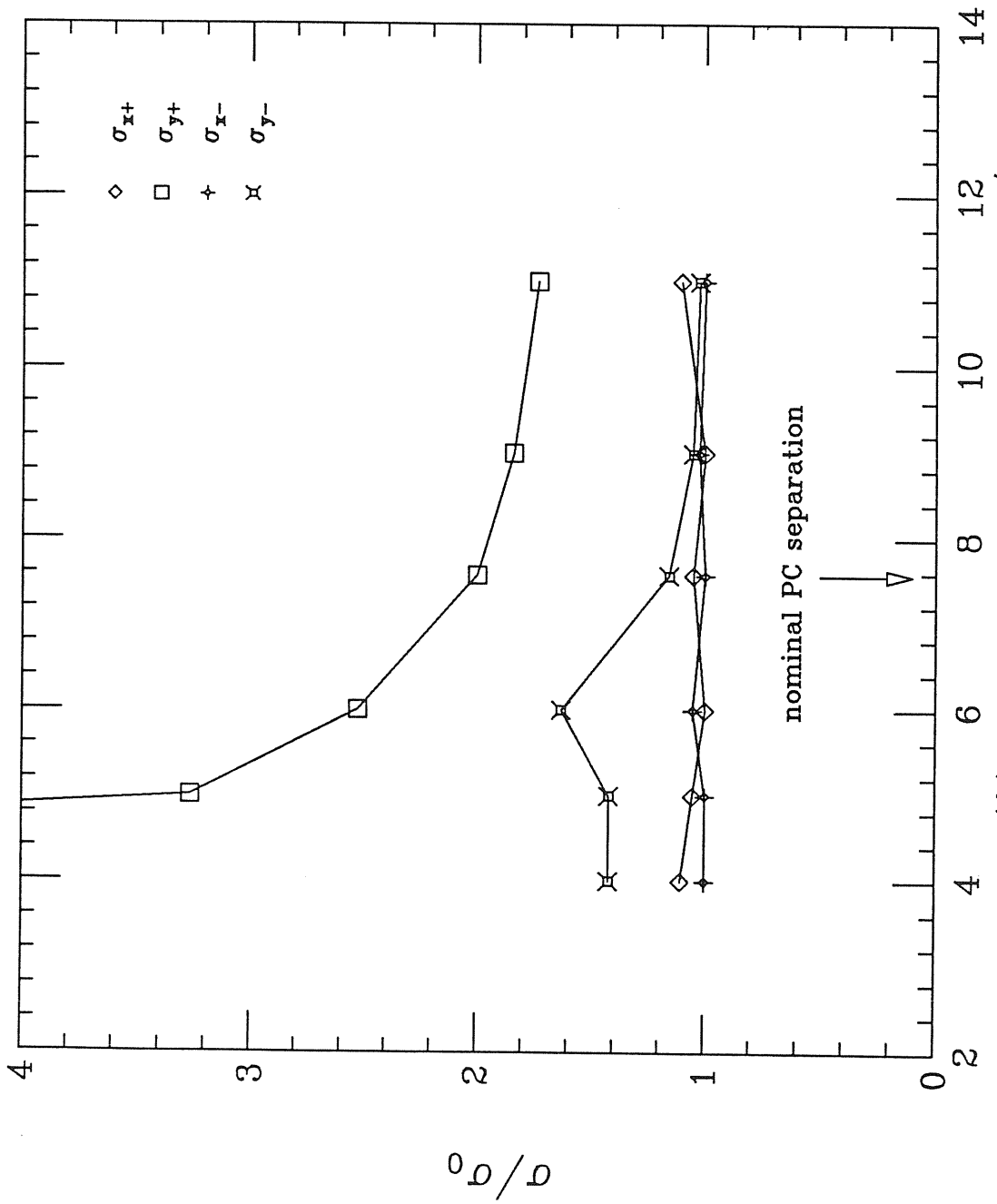

Fig. 7. Case 1B2. Same as 1A except that N_+ and N_- are a factor of 5/3 times larger.

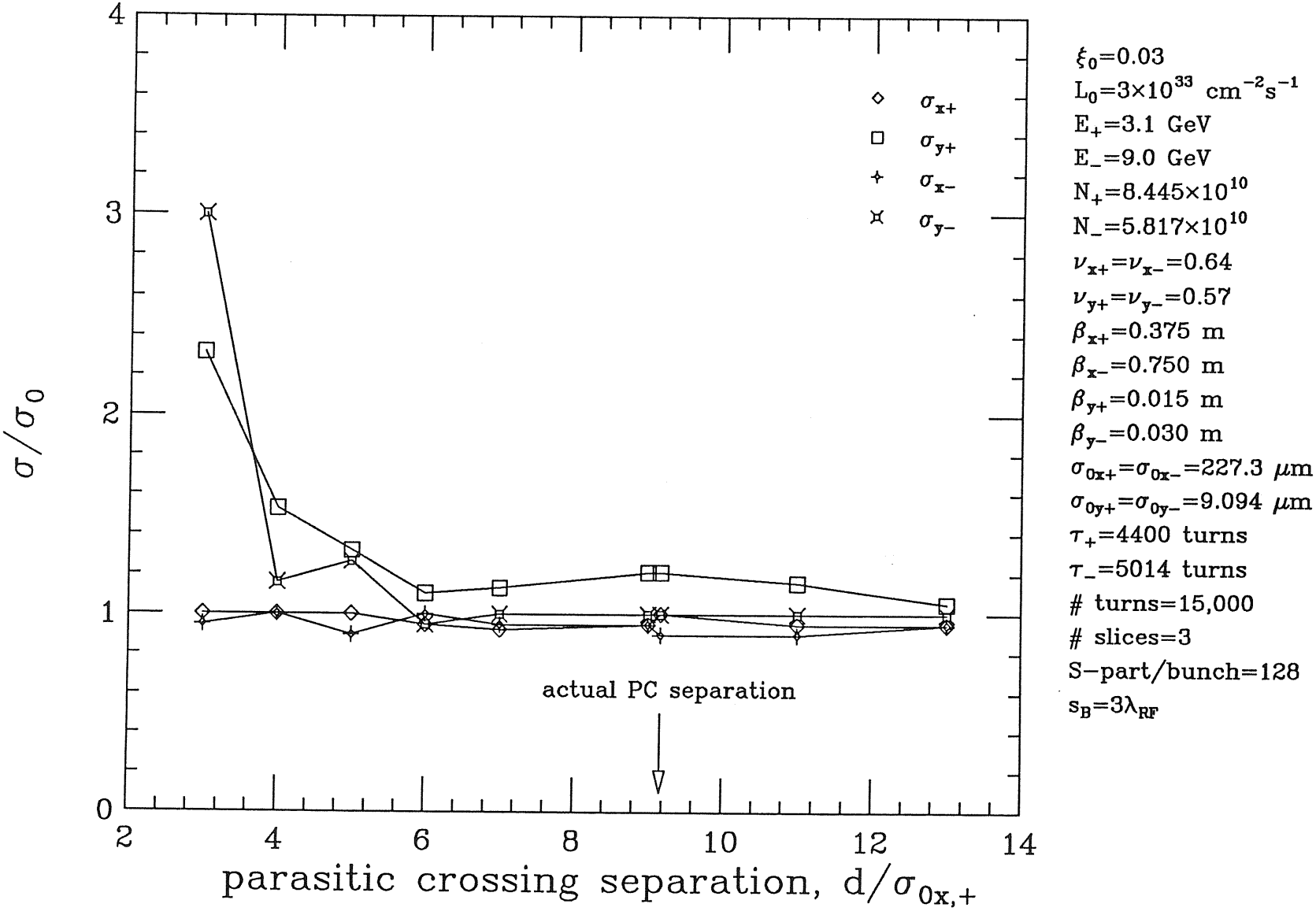

Fig. 8. Case 2A. Bunch spacing, nominal emittances and number of particles per bunch are a factor of 3/2 larger than in case 1A. Number of superparticles/ bunch = 128.

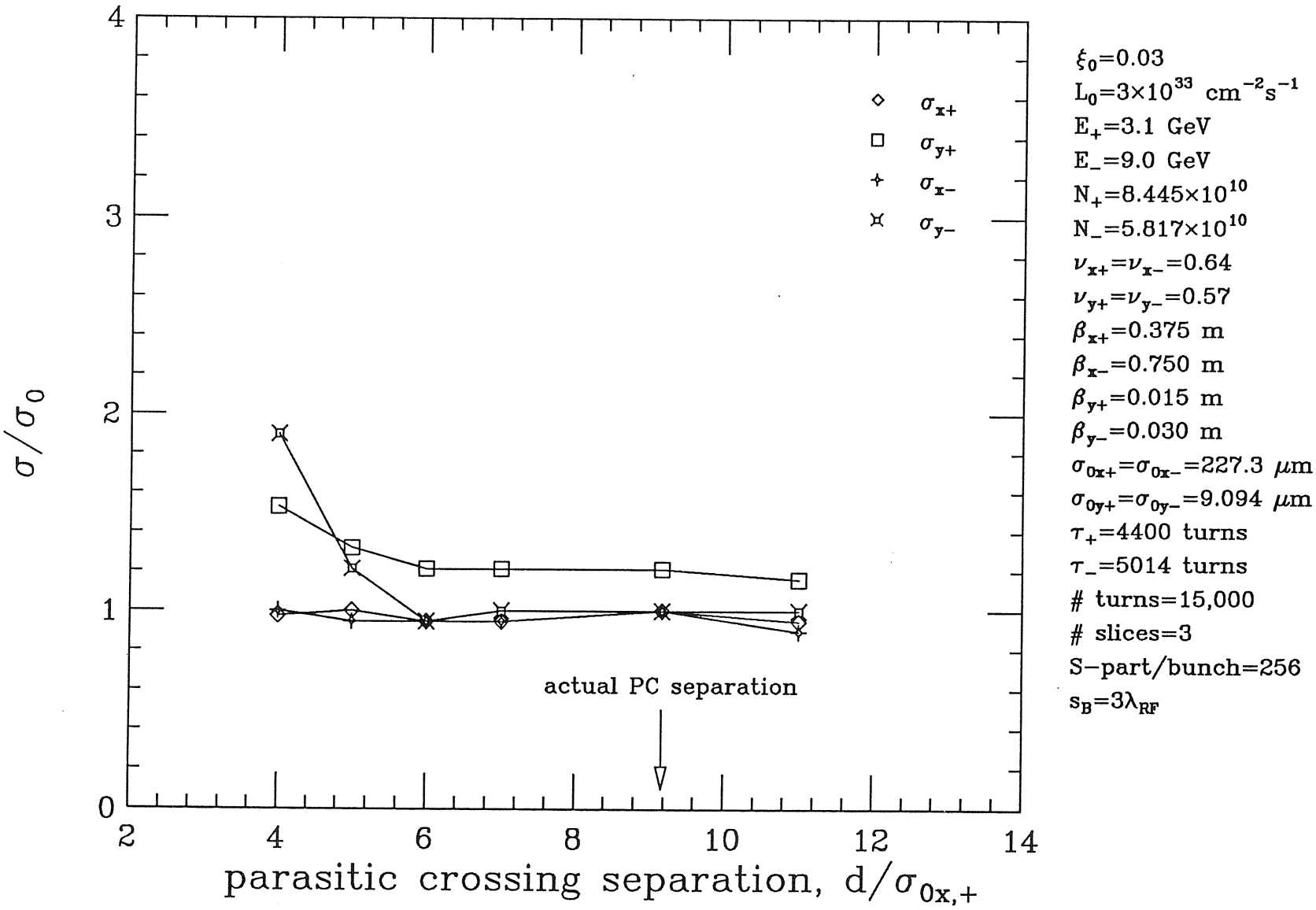

Fig. 9. Case 2A2. Bunch spacing, nominal emittances and number of particles per bunch are a factor of 3/2 larger than in case 1A.

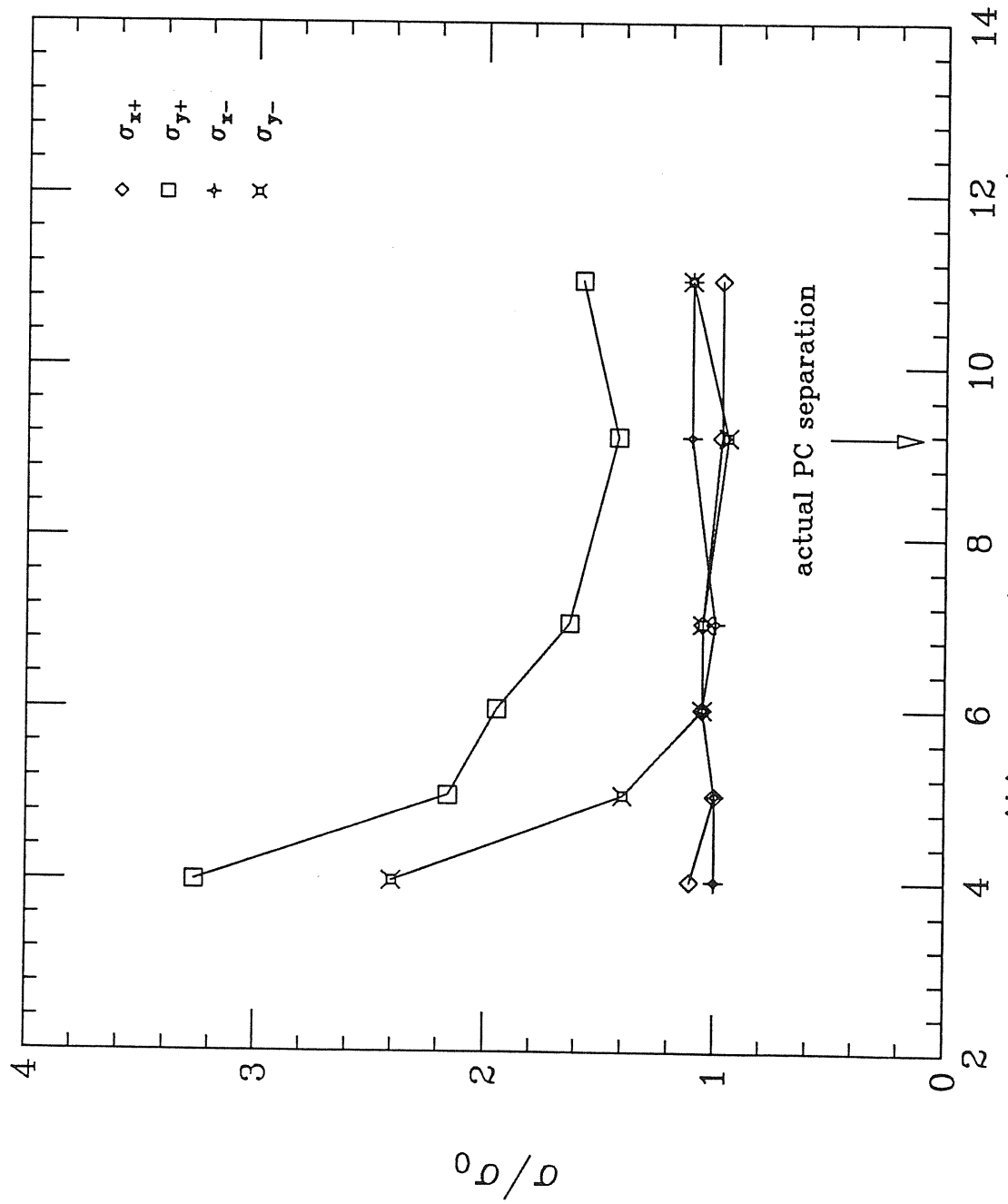

Fig. 10. Case 2B. Same as 2A except that N_+ and N_- are a factor of 5/3 larger.

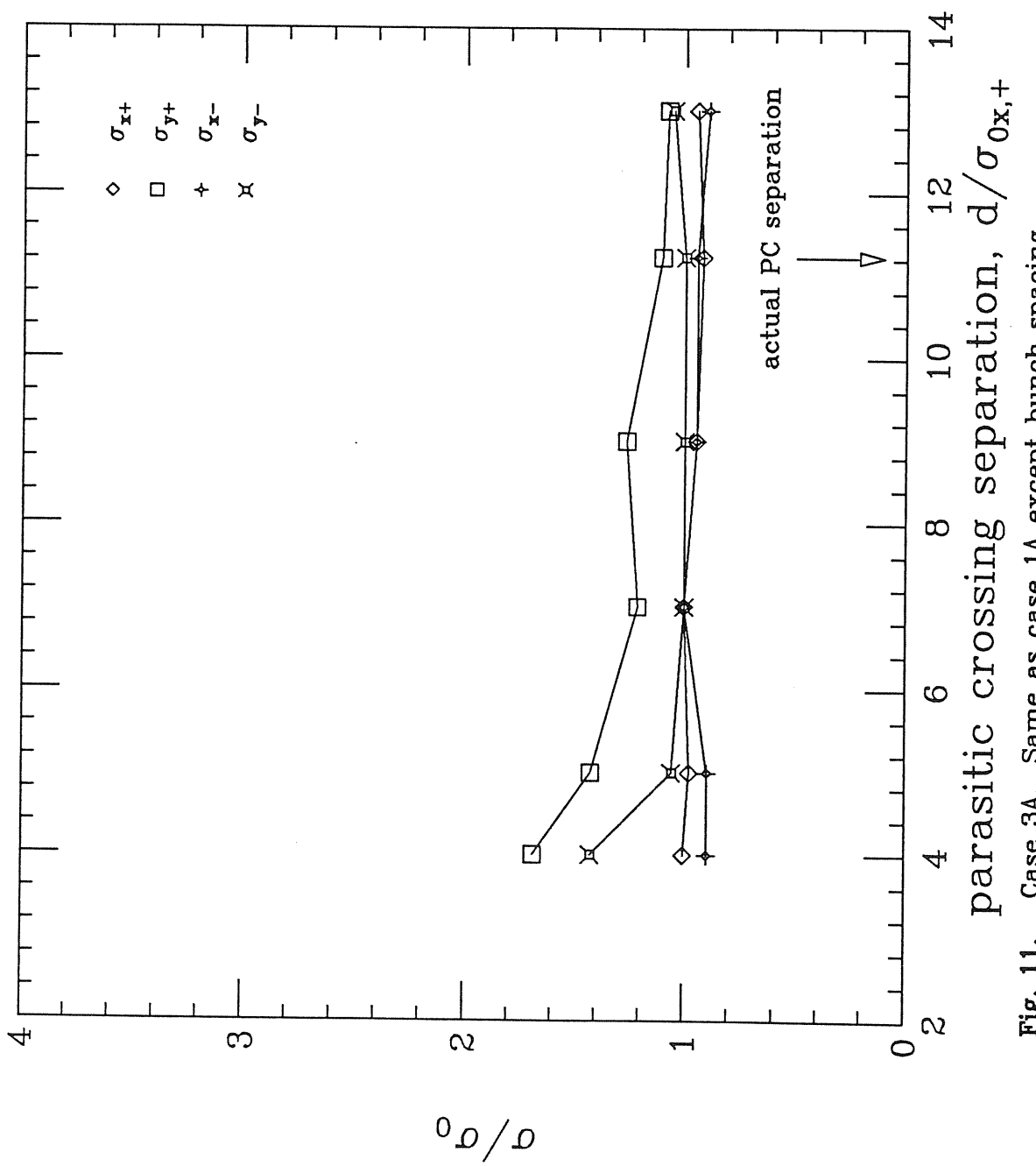

Fig. 11. Case 3A. Same as case 1A except bunch spacing is 50% larger.

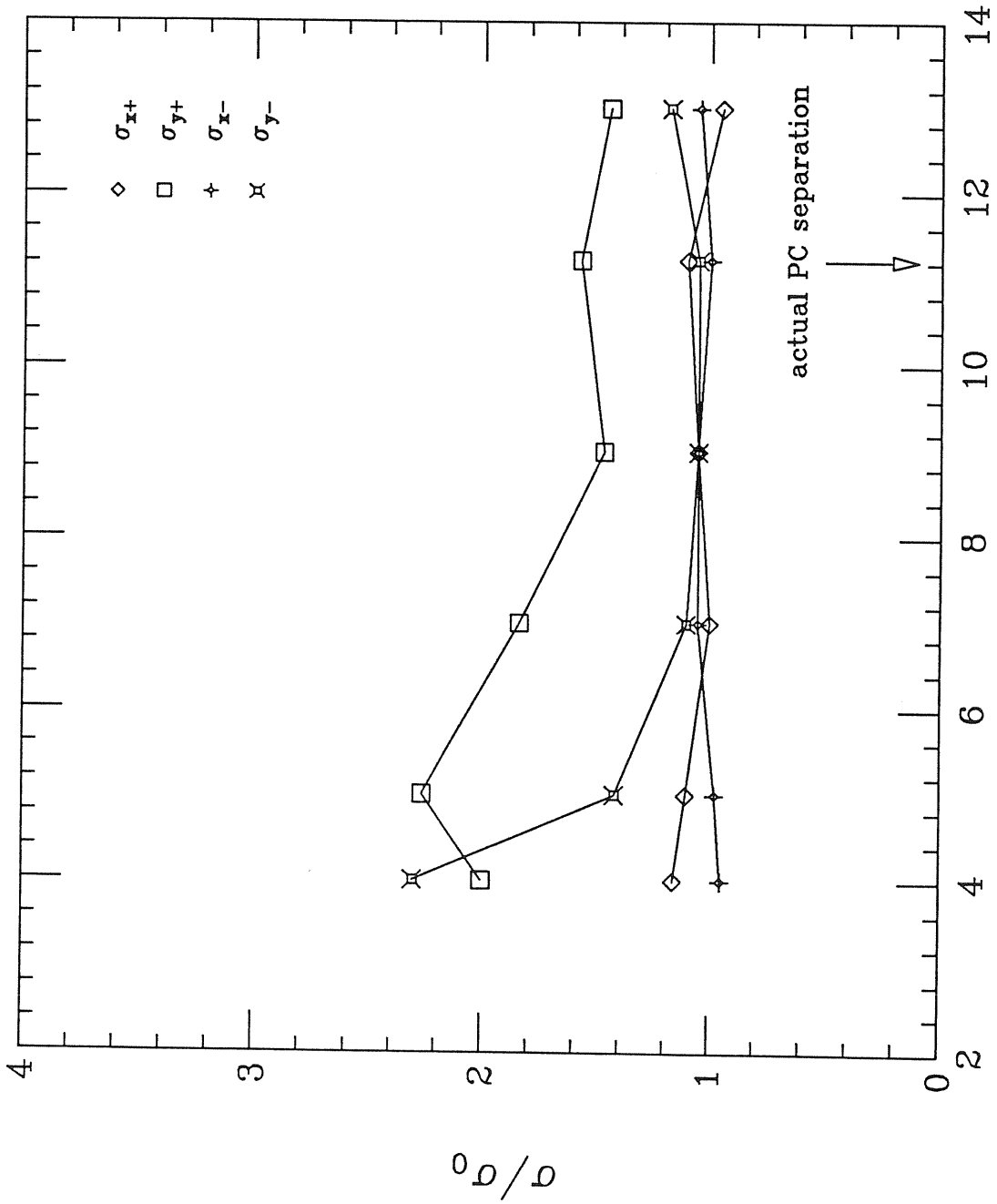

Fig. 12. Case 3B. Same as case 1B except bunch spacing is 50% larger.

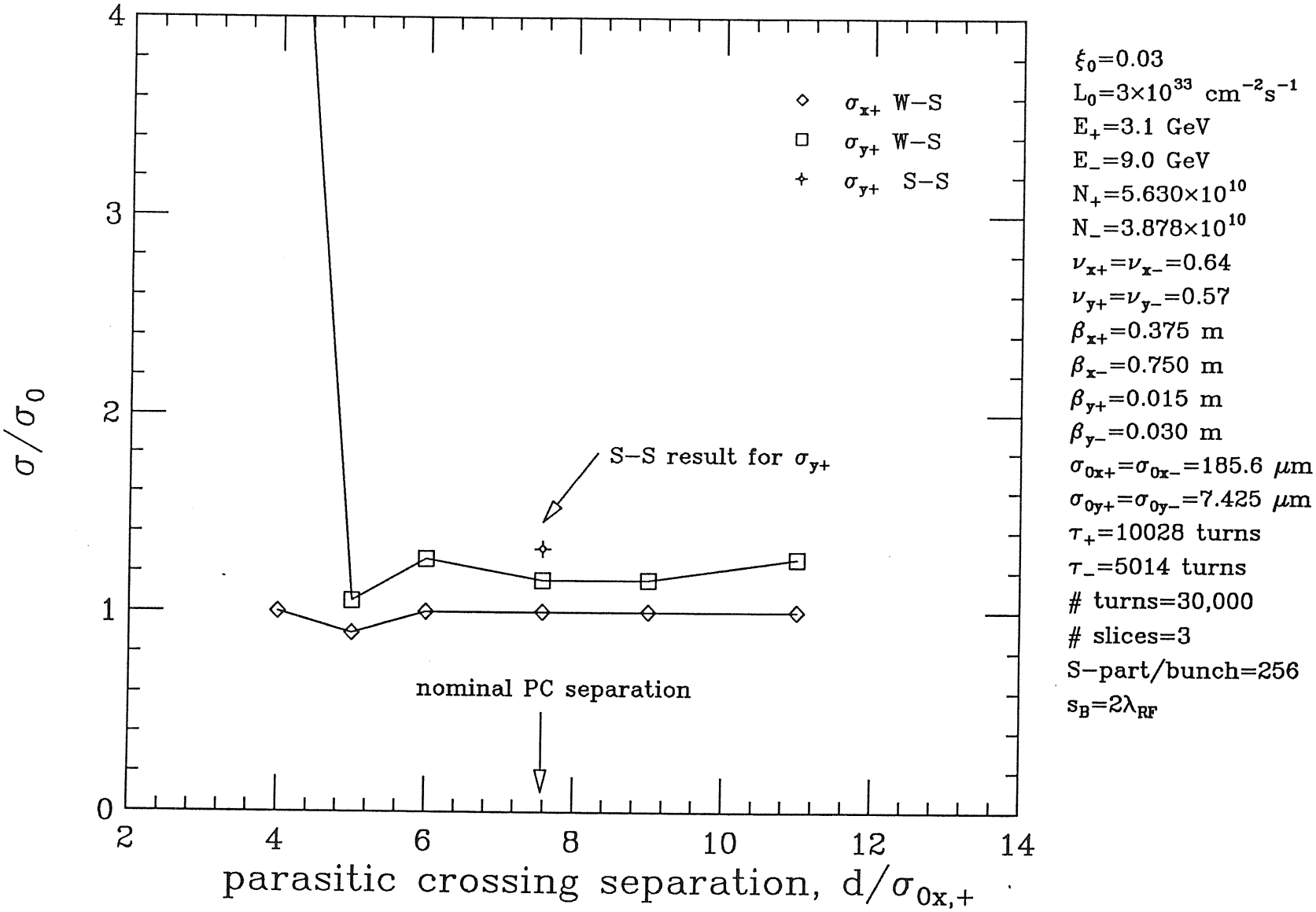

Fig. 13. Case 5A. Same as case 1A except LER damping time is 10028 turns instead of 4400 turns. W–S means weak–strong simulation; S–S means strong–strong simulation.

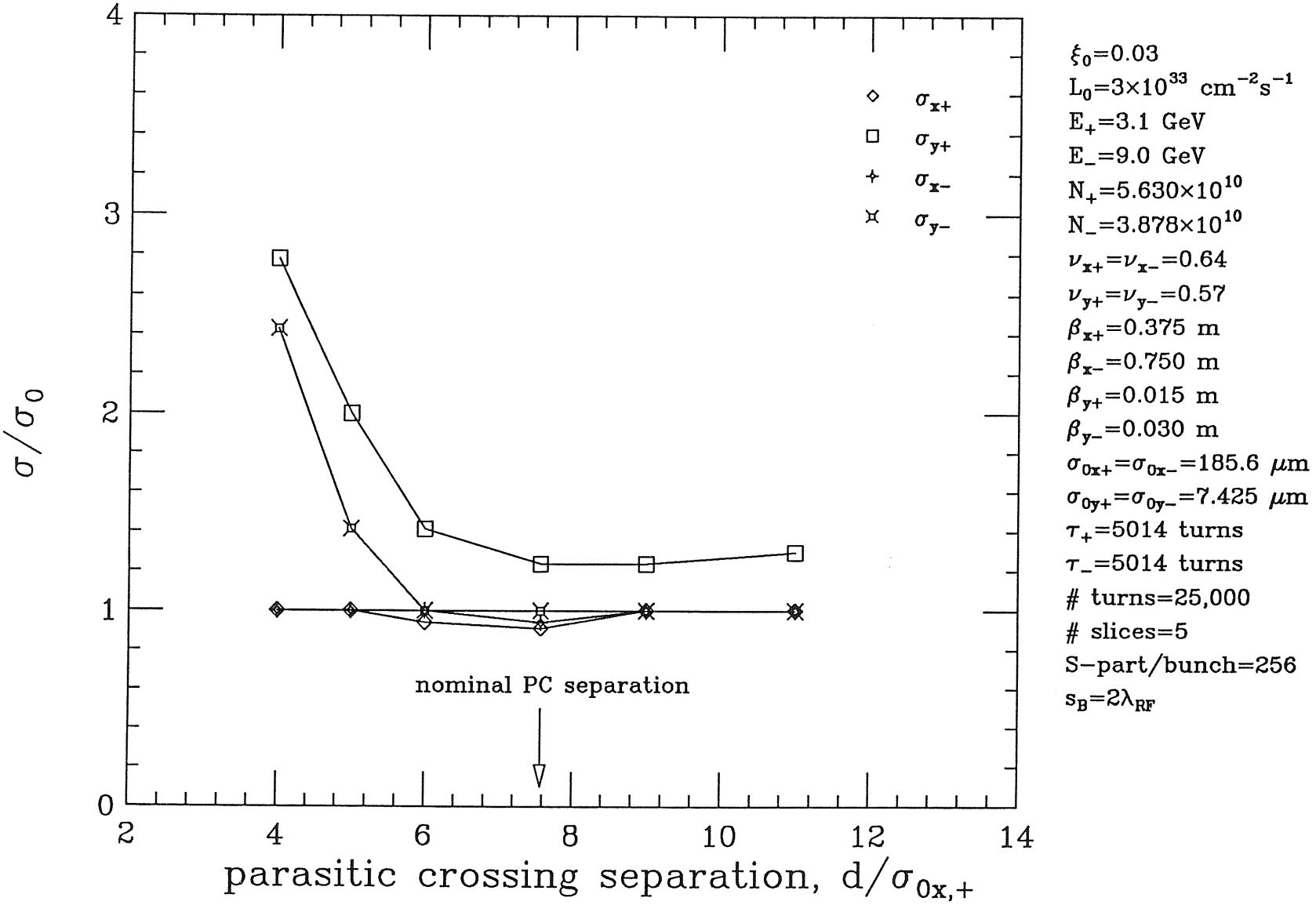

Fig. 14. Case 6A. Same as case 1A2 except that the simulation used 5 slices instead of 3, and was run for 25,000 turns instead of 15,000.

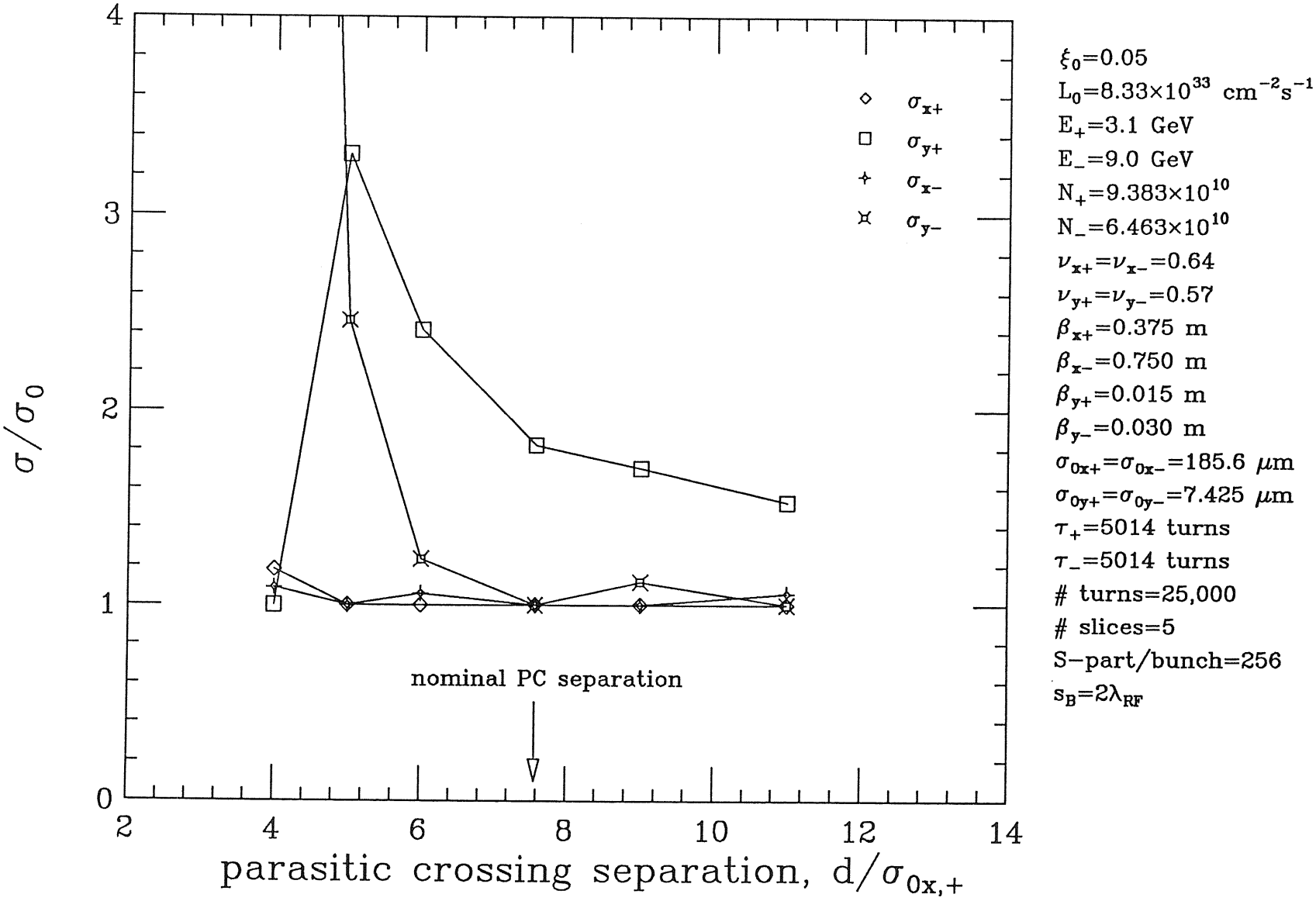

Fig. 15. Case 6B. Same as case 1B except that τ_+=5014 turns instead of 4400, and the simulation used 5 slices and 25,000 turns instead of 3 and 15,000, respectively.

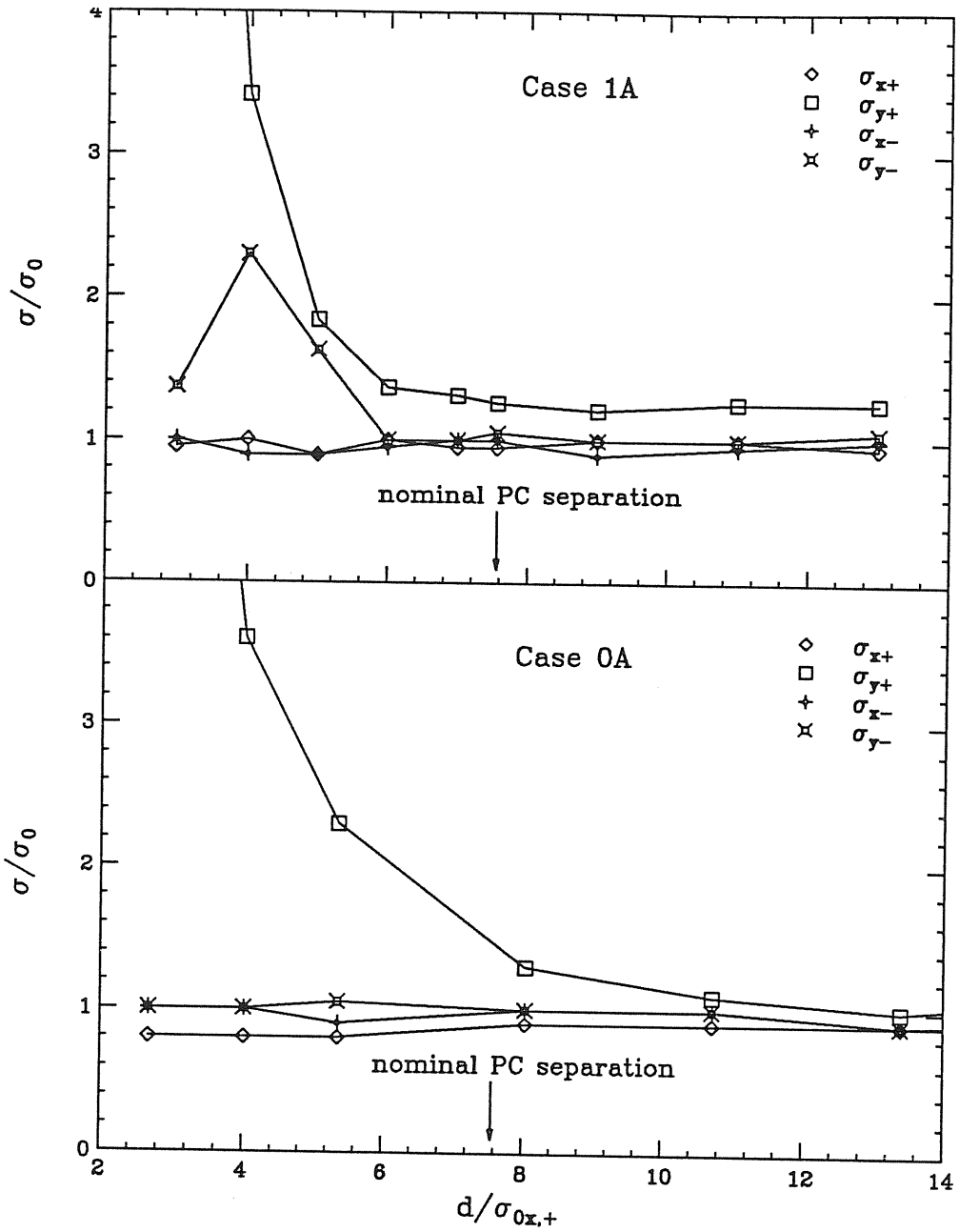

Fig. 16. Case 0A vs. Case 1A: Old (ν_x=0.09, ν_y=0.05) vs. new (ν_x=0.64, ν_y=0.57) working point.

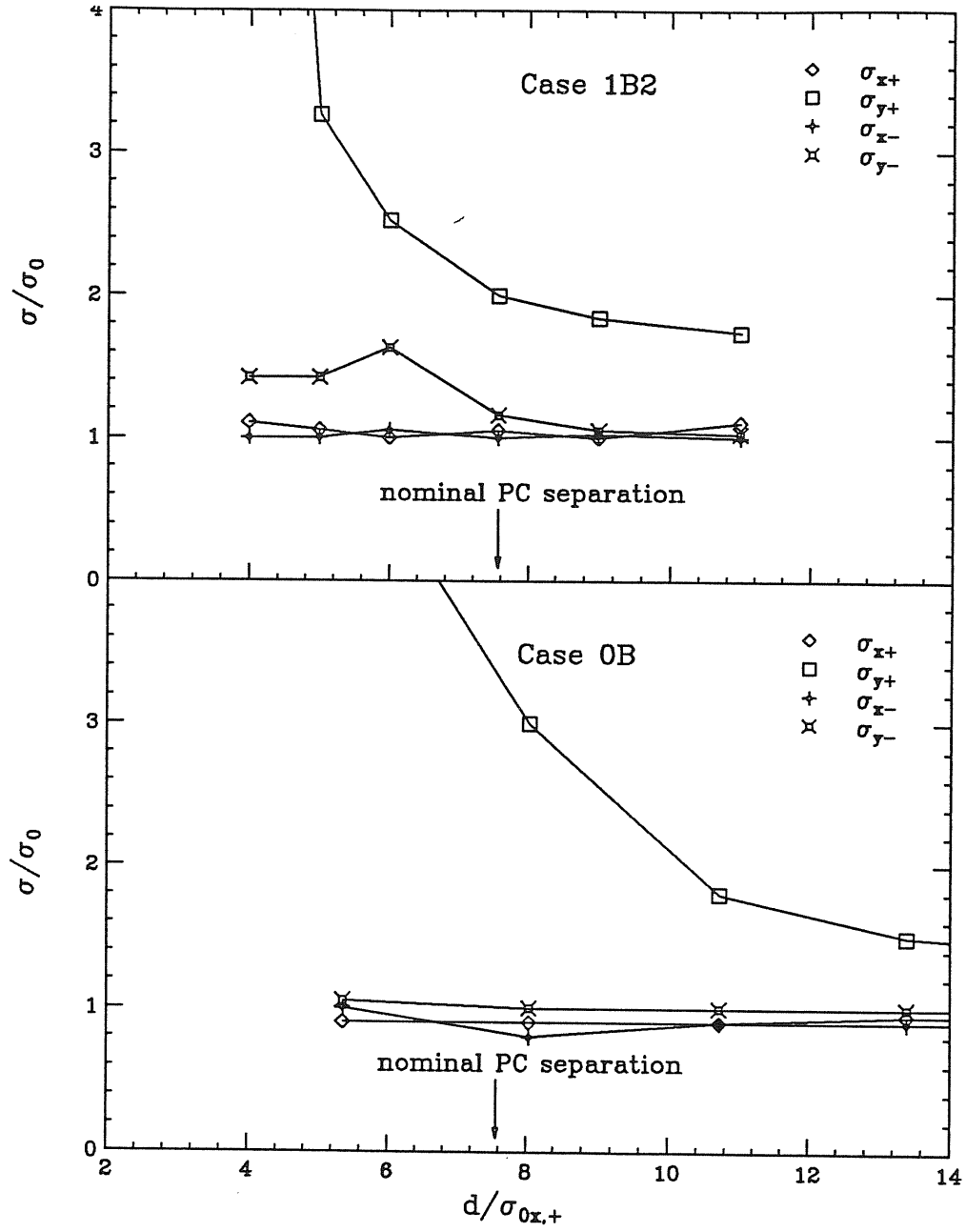

Fig. 17. Case 0B vs. Case 1B2: Old (ν_x=0.09, ν_y=0.05) vs. new (ν_x=0.64, ν_y=0.57) working point.

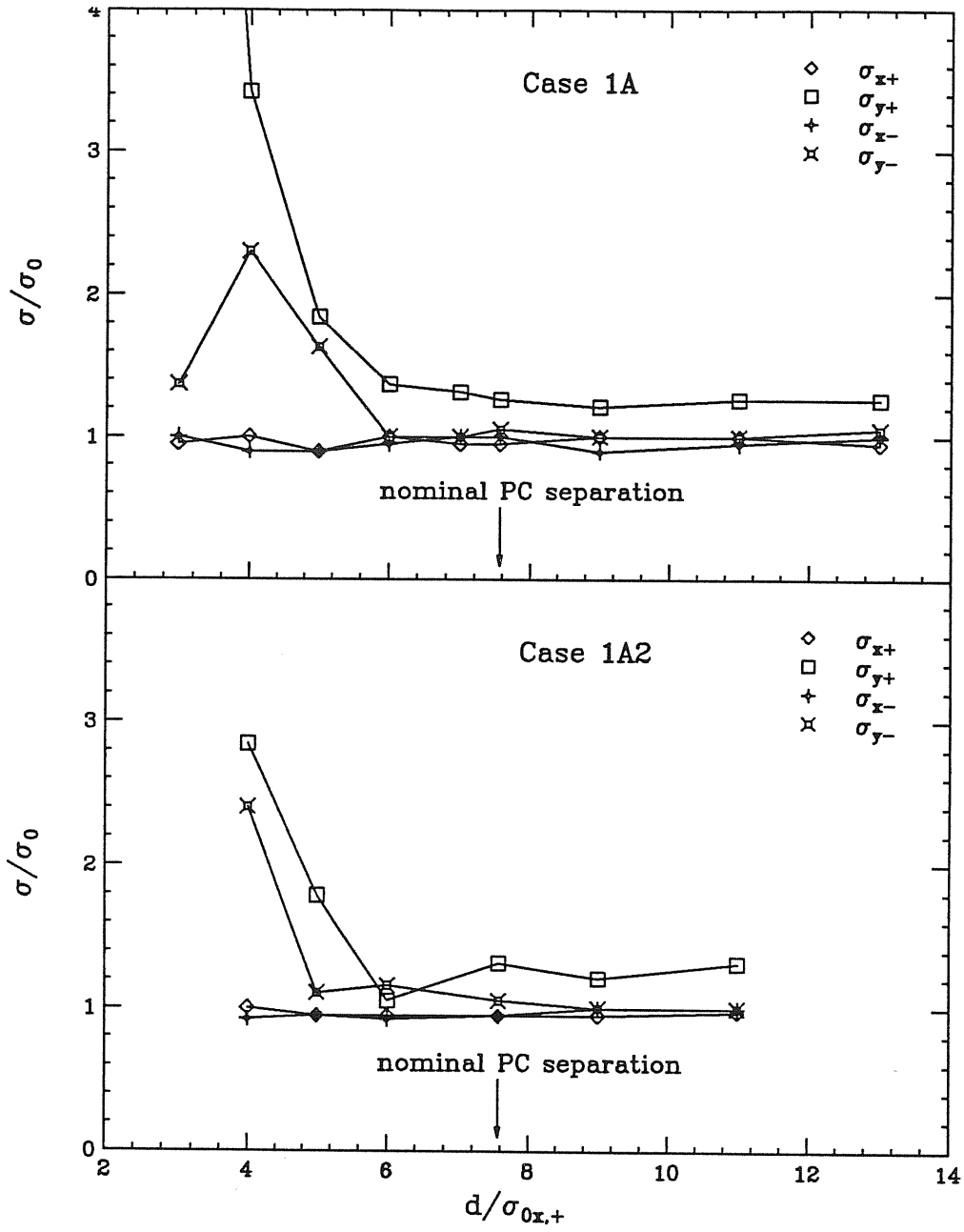

Fig. 18. Case 1A vs. Case 1A2: Approximately equal (τ_+=4400; τ_-=5014) vs. exactly equal (τ_+=τ_-=5014) damping times.

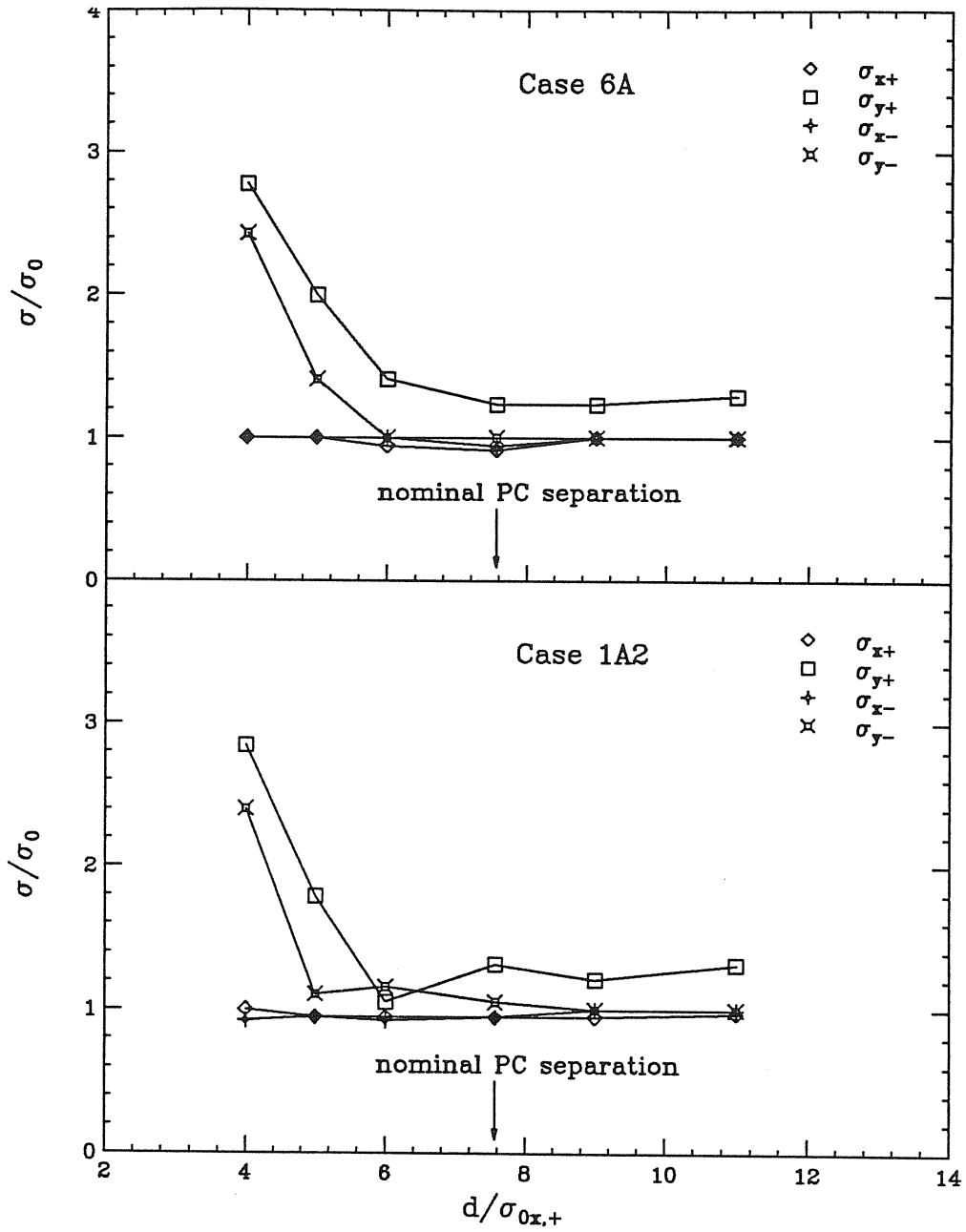

Fig. 19. Case 6A vs. Case 1A2: Five slices and long runs (25,000 turns) vs. three slices and short runs (15,000 turns).

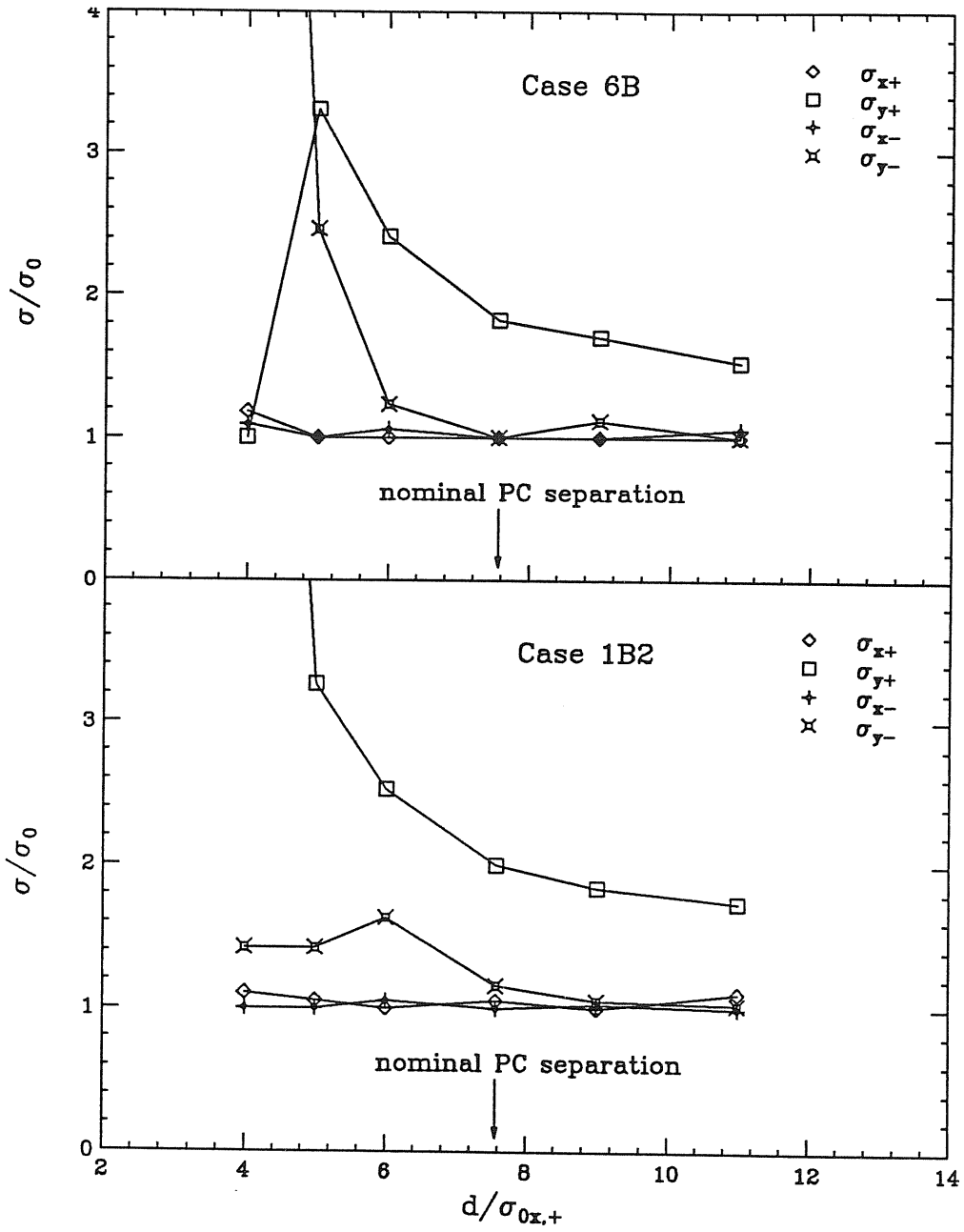

Fig. 20. Case 6B vs. Case 1B2: Five slices and long runs (25,000 turns) vs. three slices and short runs (15,000 turns).

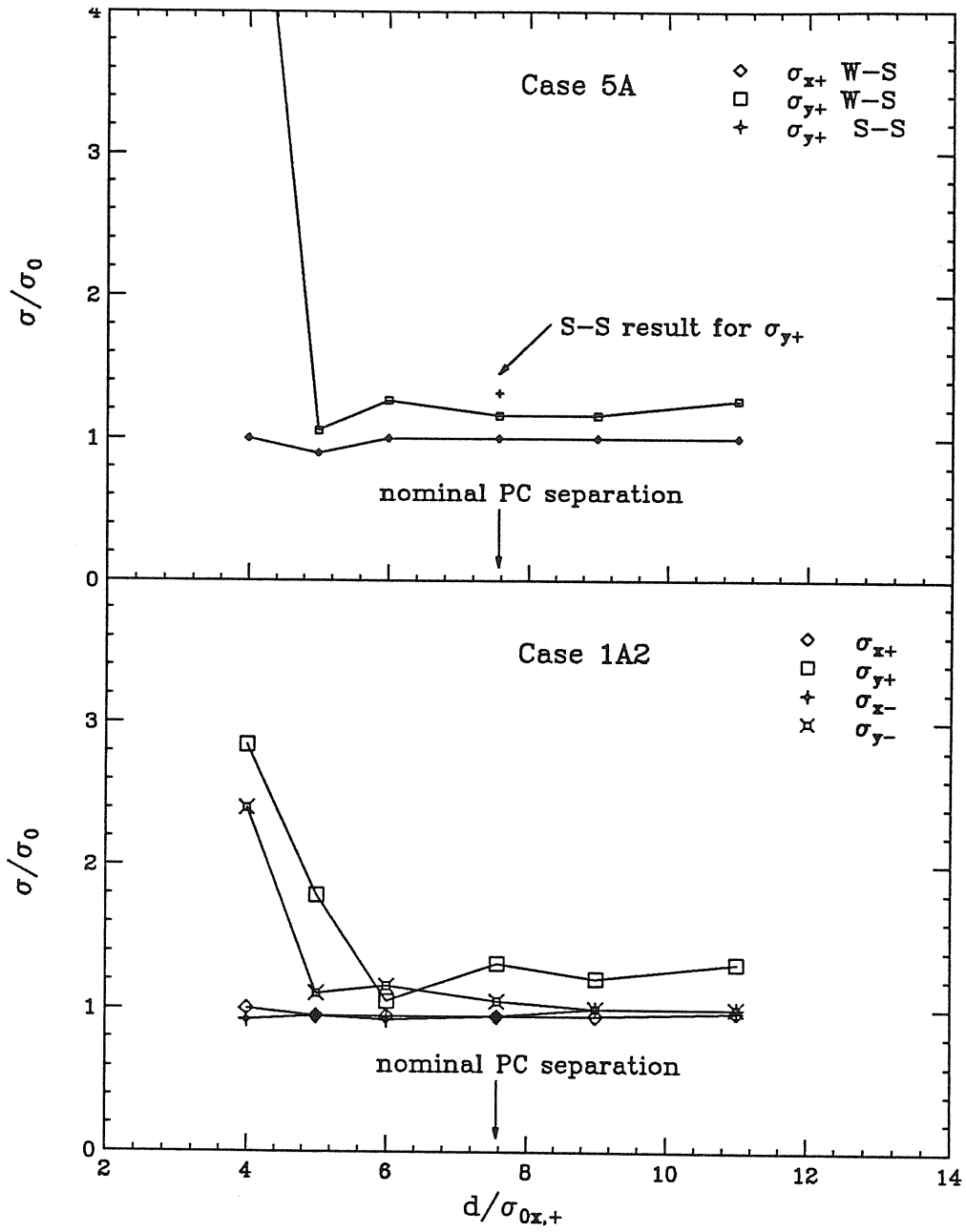

Fig. 21. Case 5A vs. Case 1A2: τ_+=10028 turns vs. τ_+=5014 turns.

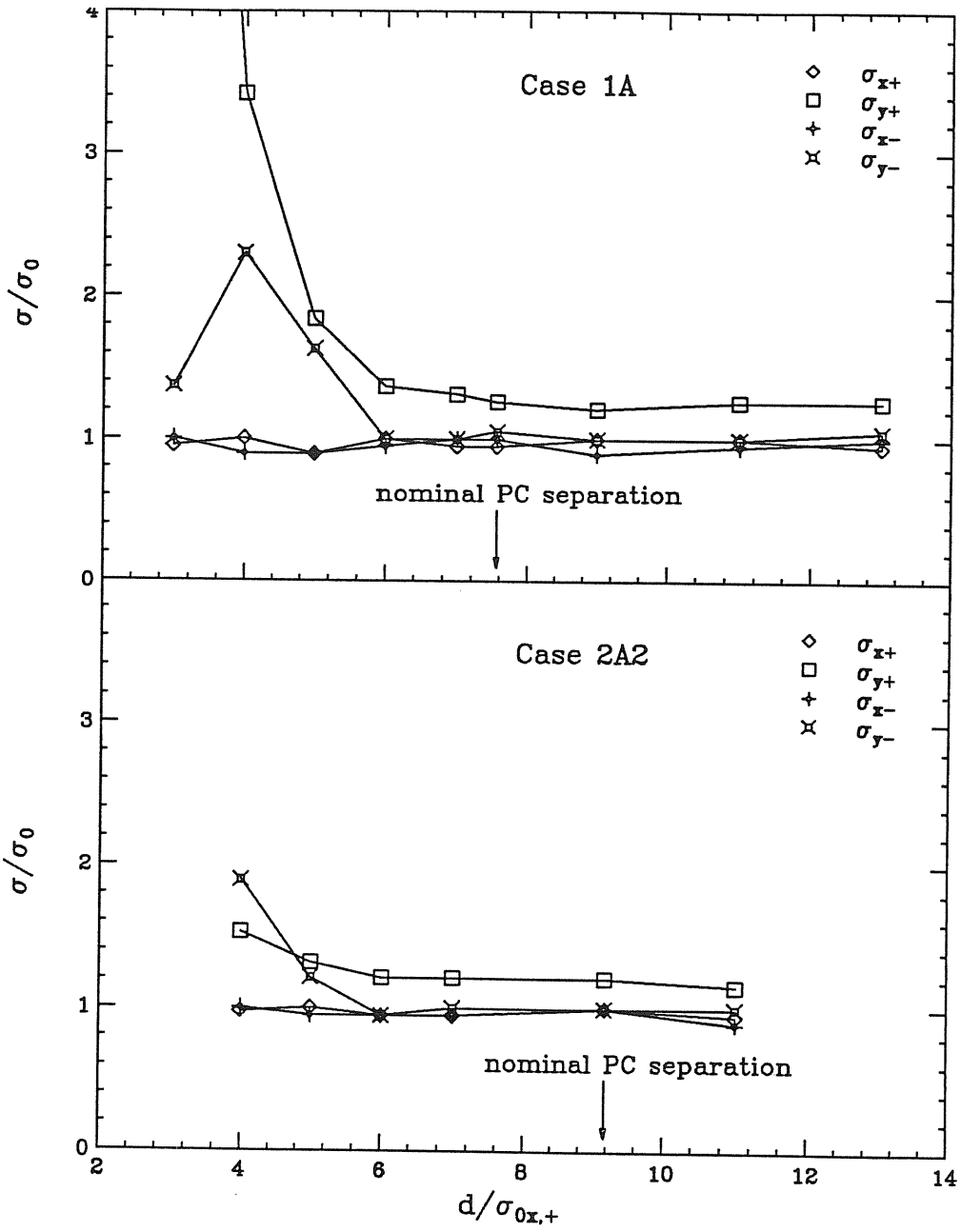

Fig. 22. Case 1A vs. Case 2A2: $s_B=2\lambda_{RF}$ vs $s_B=3\lambda_{RF}$.

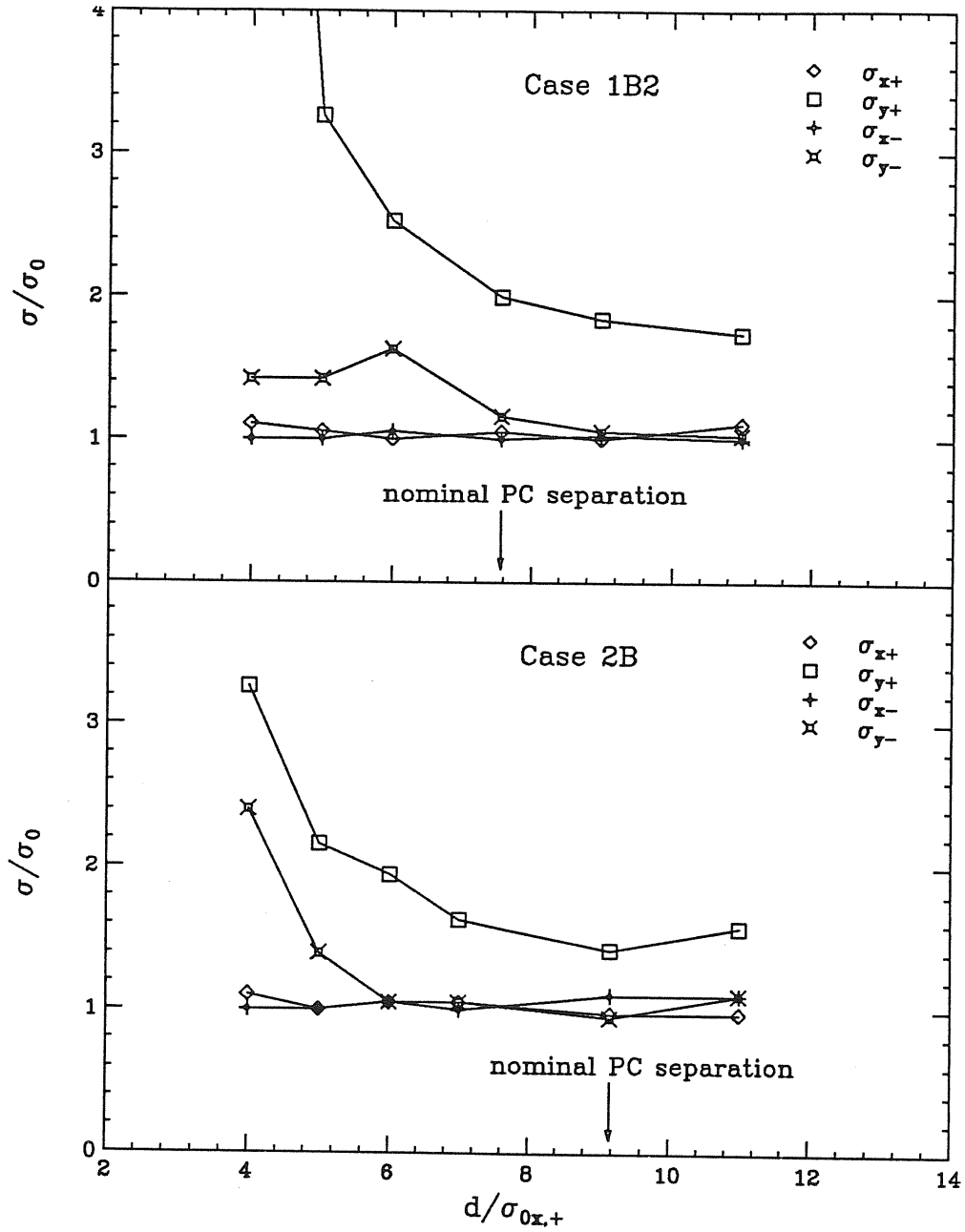

Fig. 23. Case 1B2 vs. Case 2B: $s_B=2\lambda_{RF}$ vs $s_B=3\lambda_{RF}$.

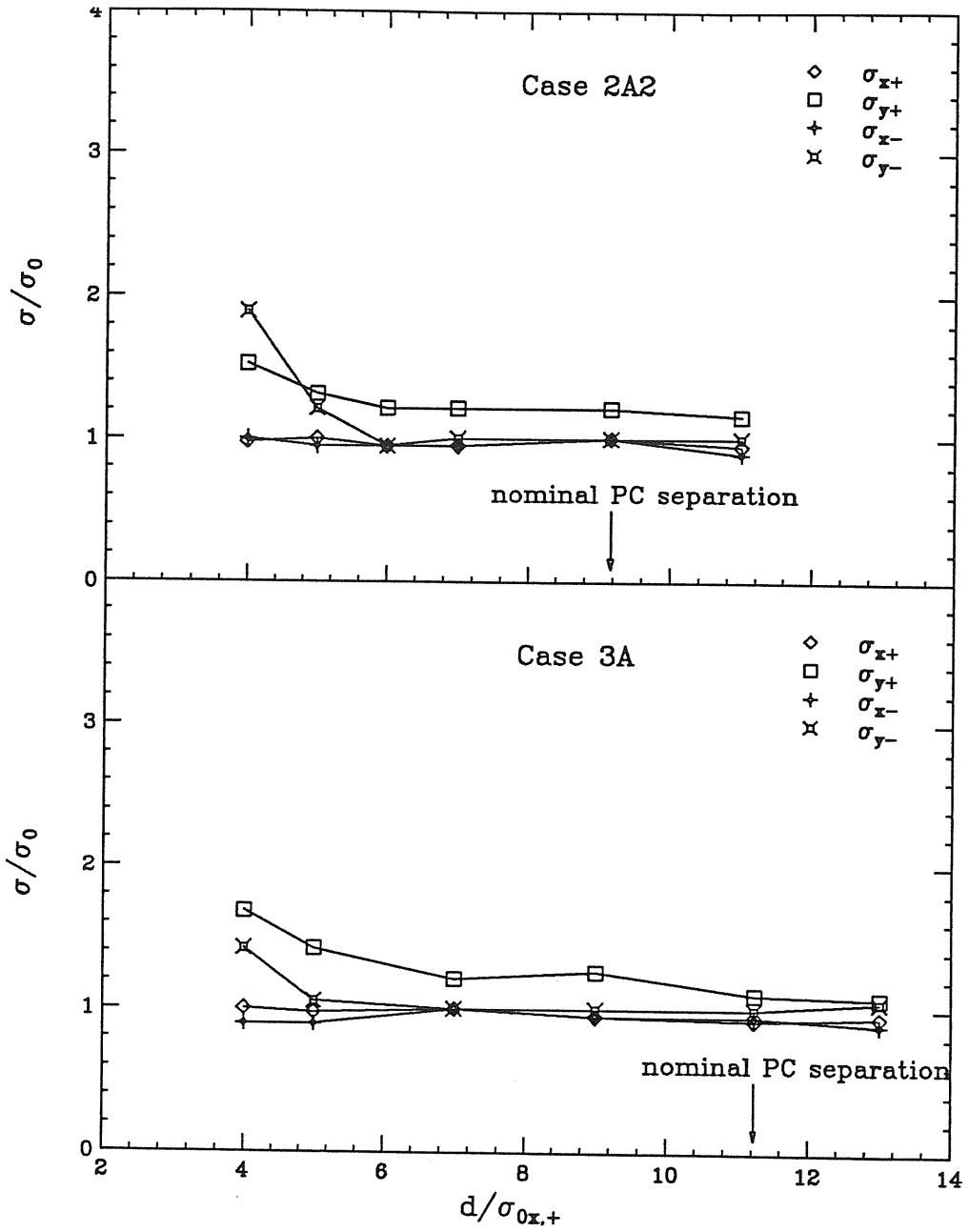

Fig. 24. Case 2A2 vs. Case 3A: 'Fat' bunches vs. nominal bunches.

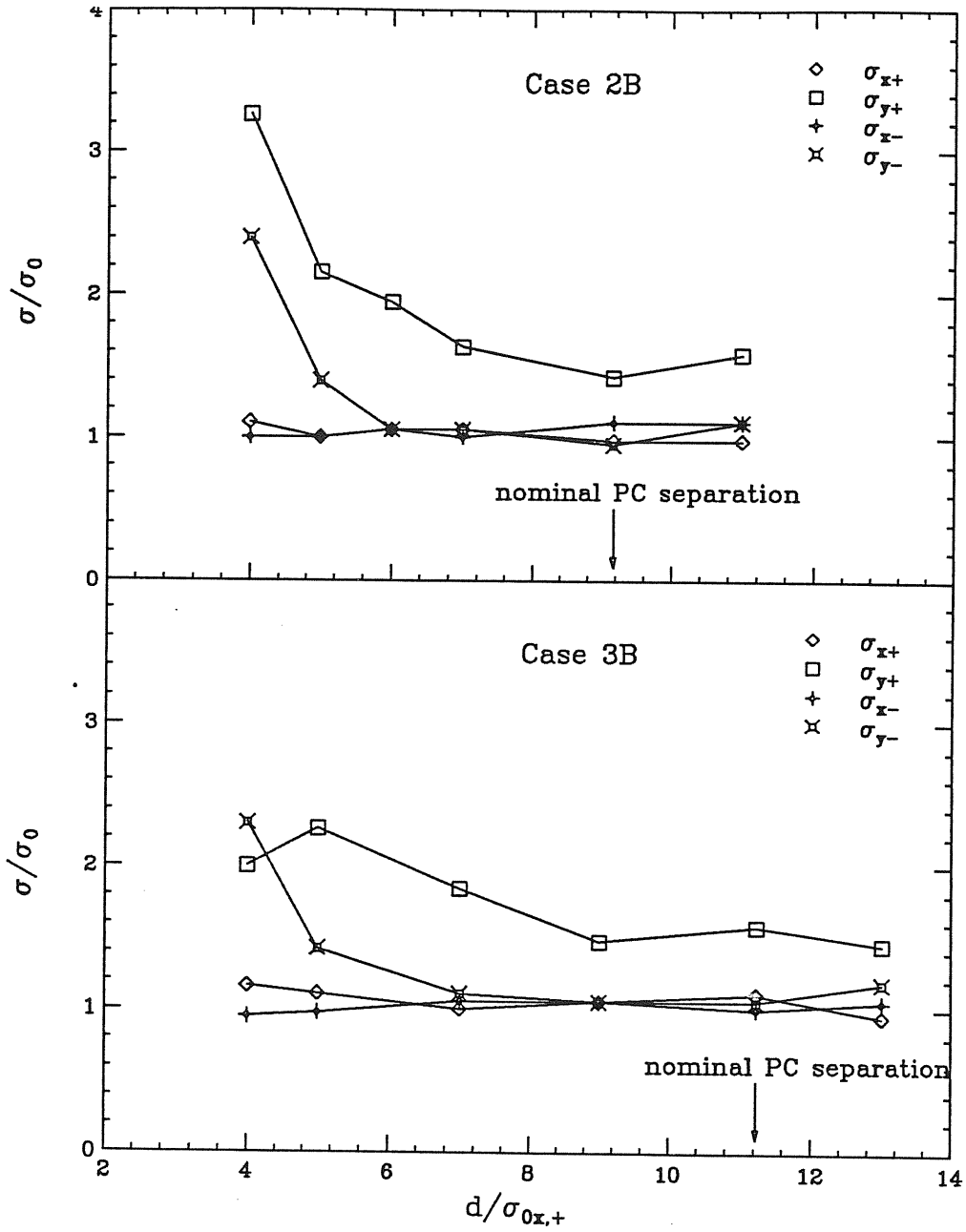

Fig. 25. Case 2B vs. Case 3B: 'Fat' bunches vs. nominal bunches.

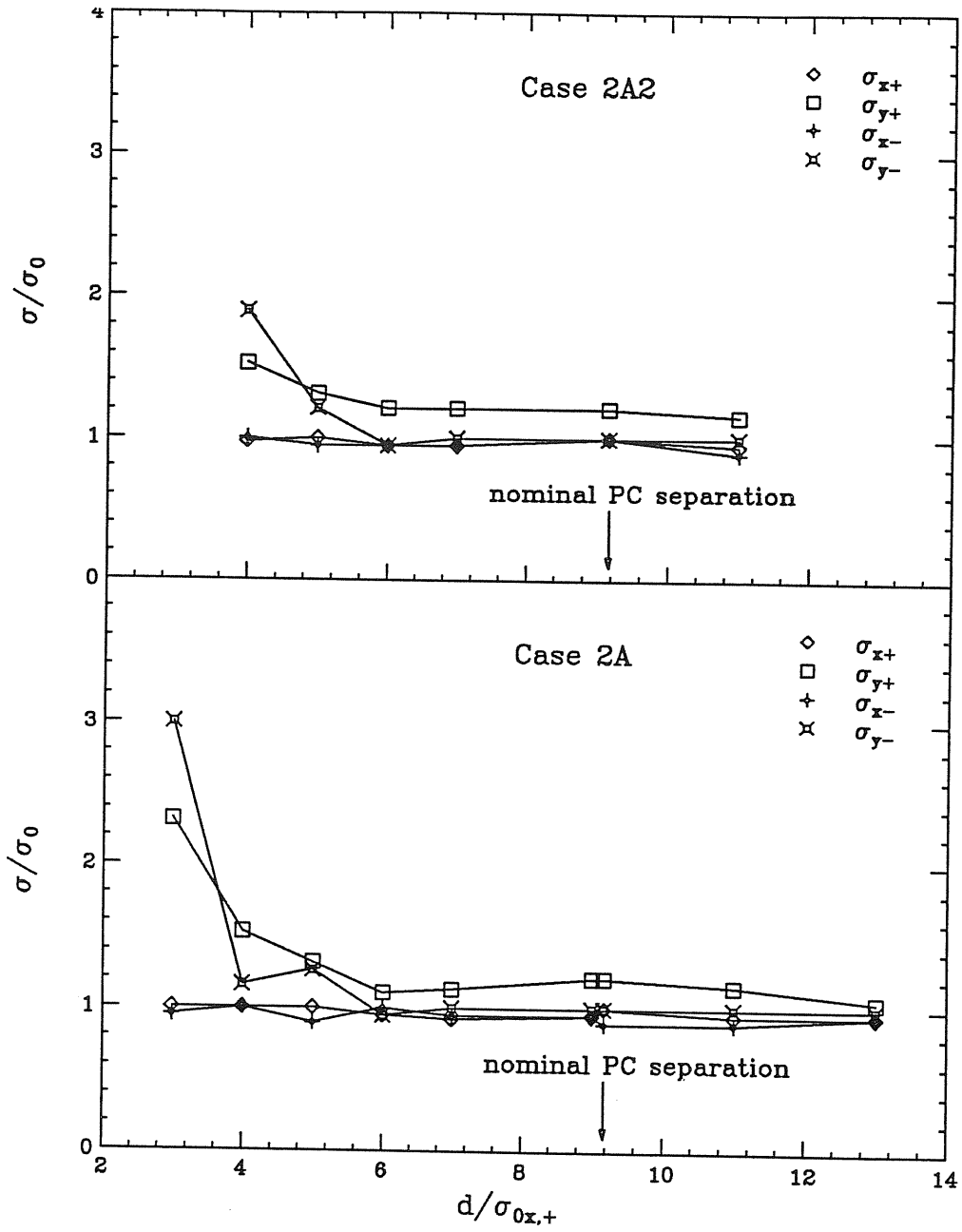

Fig. 26. Case 2A2 vs. Case 2A: 256 vs. 128 superparticles per bunch.

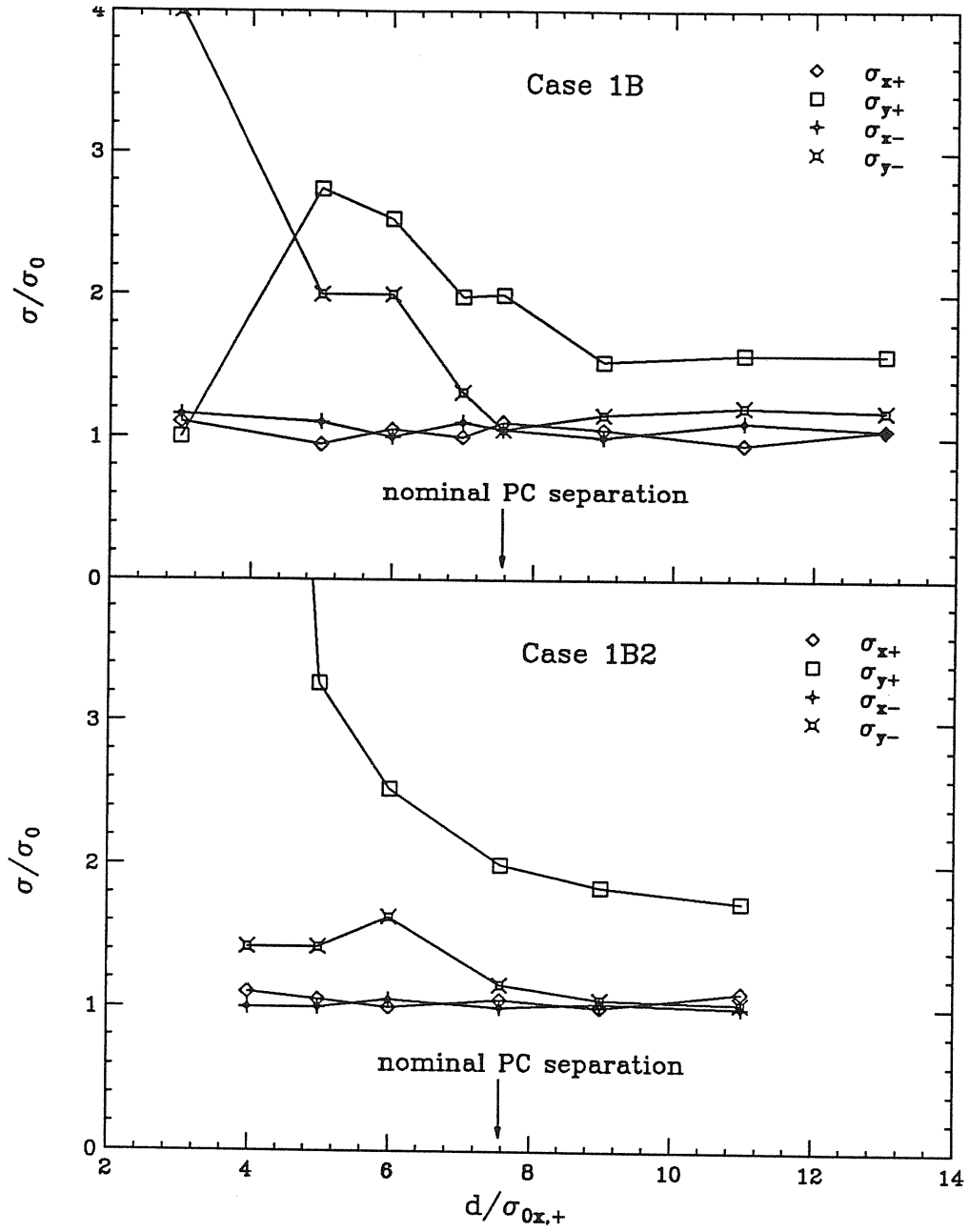

Fig. 27. Case 1B vs. Case 1B2: 128 vs. 256 superparticles per bunch.