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Erratum

Erratum to "Theoretical investigation of the energy resolution of an ideal hemispherical deflector analyzer and its dependence on the distance from the focal plane" [J. Electron. Spectrosc. Relat. Phenom. 152 (2006) 67–77]

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The publisher regrets that in Fig. 11 of the above paper, the figure in the top panel was not reproduced properly. We have now reproduced Fig. 11 correctly on the following page.

The author also discovered that all line shapes in Figs. 8–11 were improperly calculated. The error involved inadvertently using the same set of uniform distributed random numbers in the range [0, 1) to obtain *both* distributions in r_0 and α^*. This introduced undesired correlations in the two distributions leading to erroneous results. This error has been corrected here and now two independent sets of random numbers (generated from two different seeds) were used. Another error that was also corrected had to do with the size of the position resolution binning $\Delta r_\mathrm{d} = 0.2$ mm which, in the cases where the generated line shape was very narrow, was not small enough. A 10 times smaller bin size of $\Delta r_\mathrm{d} = 0.02$ mm was used to produce the frequency count of all corrected line shapes. This correction had the effect of changing the base widths of the narrowest line shapes making them even narrower. The two corrections resulted in the line shapes of the following figures. They should replace the figures of the same figure number in the original paper.

Fortunately, while the line shapes are quite a bit different in form (primarily more symmetric), the base width comparisons between conventional and paracentric hemispherical deflector analyzer (HDA) remain very nearly the same. Therefore, all discussion and conclusions of the original article remain the same, as do the figure captions. The corrected line shapes are now also seen to conform much better with the general line shape characteristics discussed in Ref. [18].

Finally, as an extra check, the newly added Figs. 12 and 13 compare the exact theoretical radial base width computed using Eq. (26) (lines) and the radial base width extracted from the line shapes in the new Figs. 8–11. The extremely close agreement between the two shows that the two different ways of computing the radial base widths are self-consistent as expected.

The author would like to thank Omer Sise of the Department of Physics, Afyon Kocatepe University, Turkey for pointing out the error in the random number distributions used in the generation of the line shapes.

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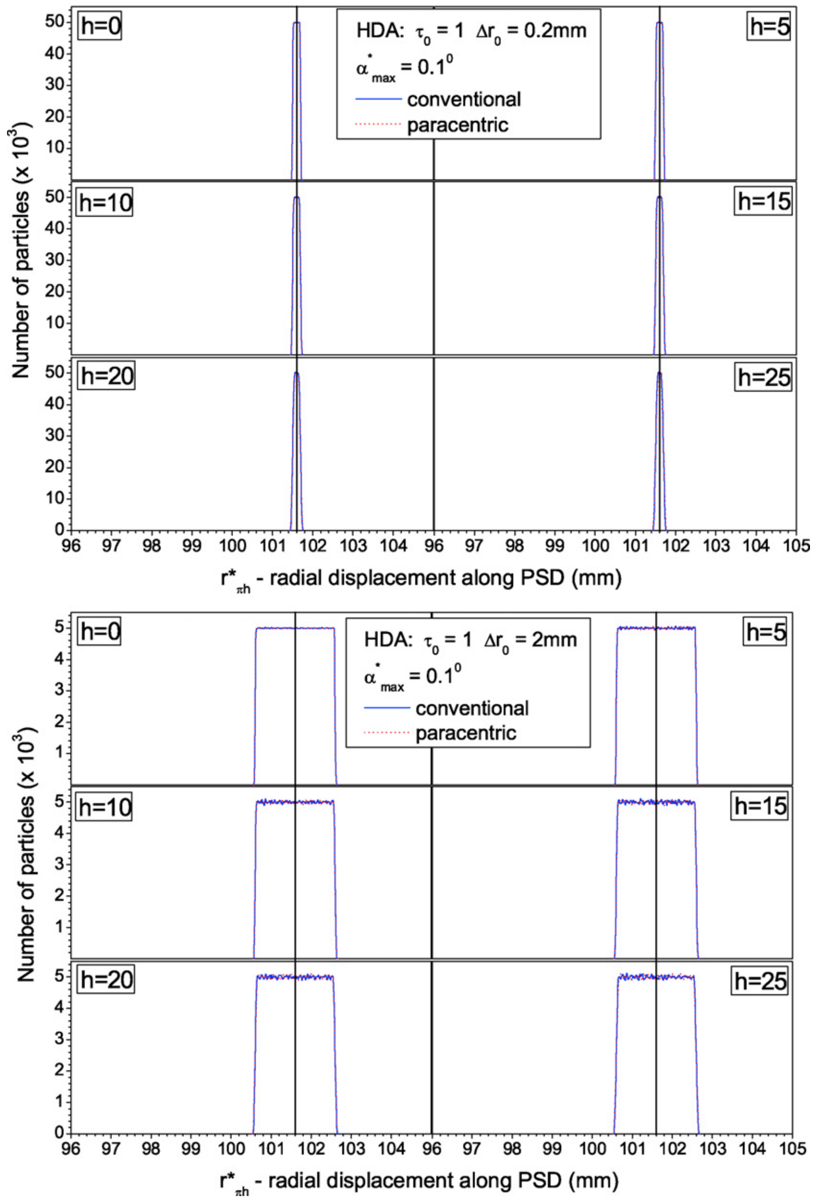

Fig. 8. Line shapes for $h = 0$–25 mm for equal sized ($\bar{R} = 101.6$ mm) paracentric ($\xi = 1.2308$ and $\gamma = 1.5$) and conventional ($\xi = \gamma = 1$) HDAs (see Table 1) at $\tau_0 = 1$ with $\Delta r_0 = 0.2$ mm (top) and $\Delta r_0 = 2$ mm (bottom), for $\alpha^*_{\max} = 0.1°$. Lines mark the position of the exit of the central ray with $r_0 = R_0$, $\alpha^* = 0$.

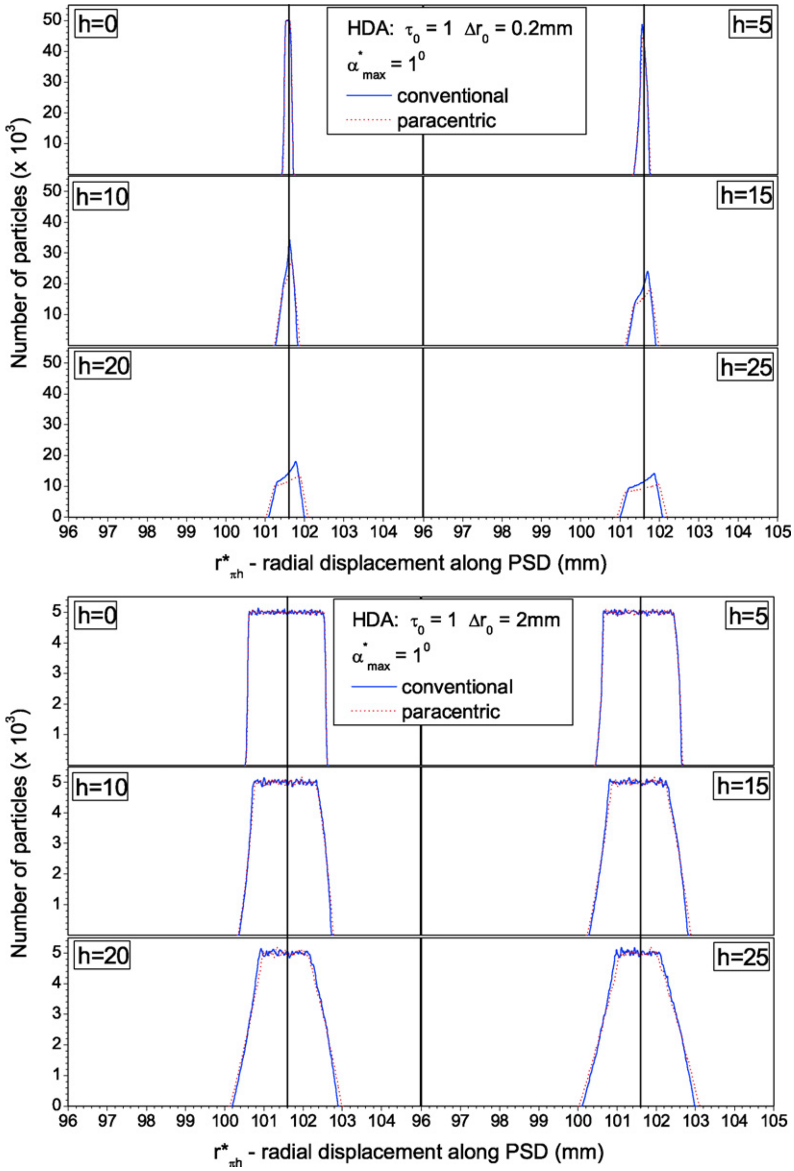

Fig. 9. Same as Fig. 8, but for $\alpha^*_{\max} = 1°$.

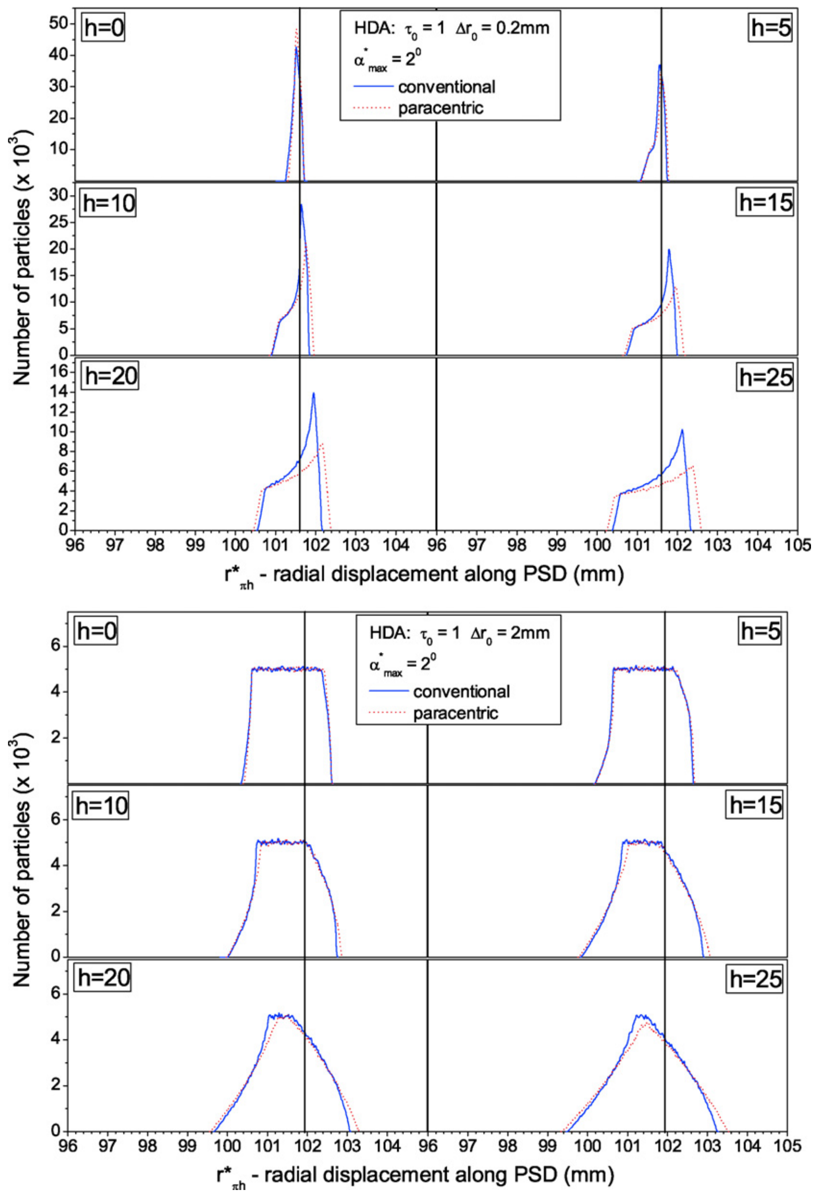

Fig. 10. Same as Fig. 8, but for $\alpha^*_{max} = 2°$. As h varies from 0–25 mm, for $\Delta r_0 = 0.2$ mm the biased paracentric HDA has χ_h (Eq. (41)) vary from 0.460–5.363, while the conventional HDA has χ_h vary from 0.618–4.354. For $\Delta r_0 = 2$ mm the corresponding χ_h variations are 0.08357–0.9753 and 0.1124-0.7919, respectively.

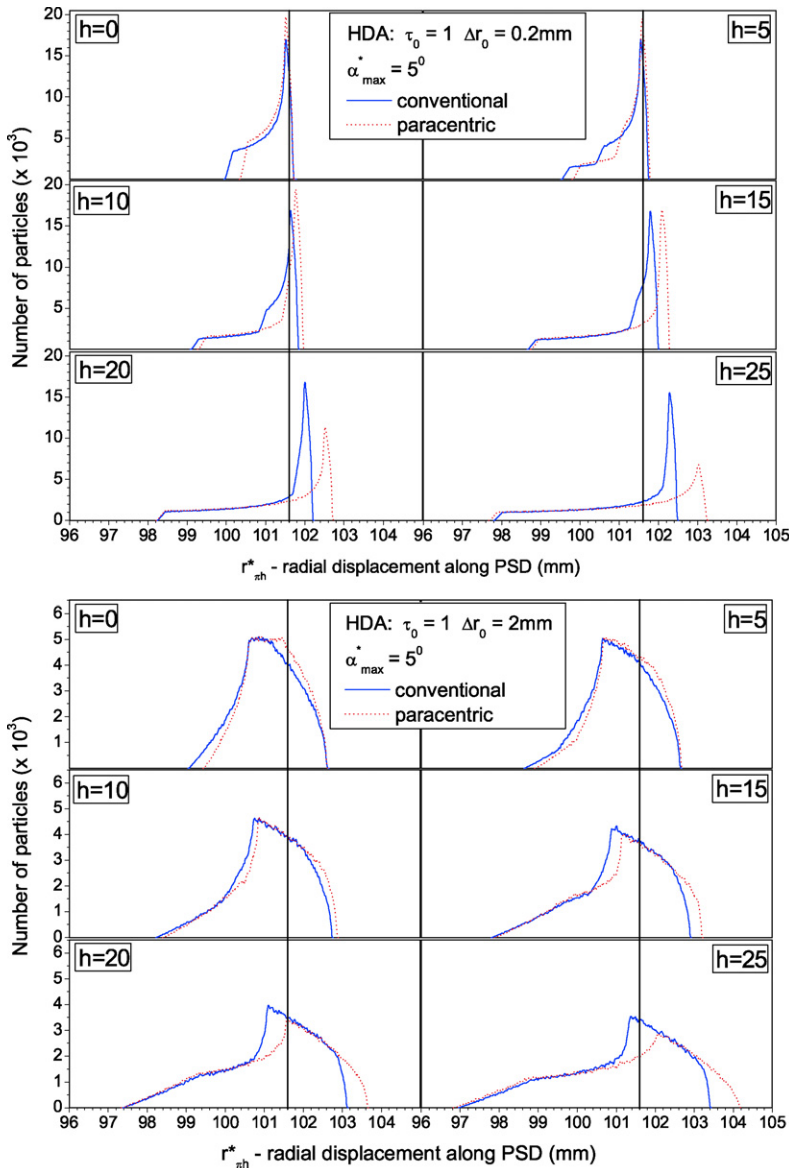

Fig. 11. Same as Fig. 8, but for $\alpha^*_{\max} = 5^\circ$. This angle is probably too extreme for conventional spectroscopy and is only shown for reference.

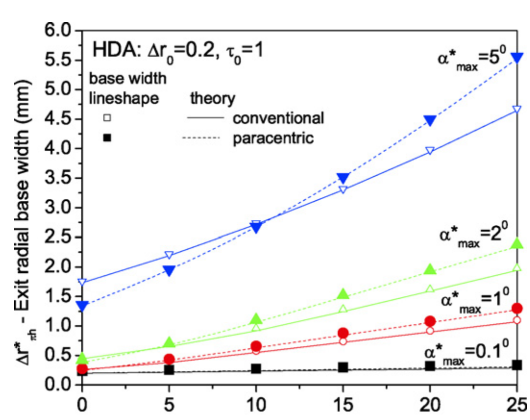

Fig. 12. Comparison of radial base widths $\Delta r^*_{\pi h}$ obtained using Eq. (26) and extracted from the corrected line shapes for $\Delta r_0 = 0.2$ mm. Lines: Eq. (26); conventional HDA (continuous), paracentric HDA (dashed). Symbols: Base widths extracted from line shapes; conventional HDA (open), paracentric HDA (closed). For $\alpha^*_{\max} = 0.1^\circ$ the base widths of the two types of HDA are almost identical and the symbols overlap.

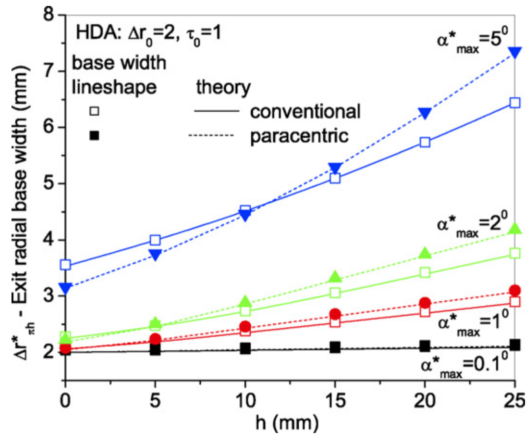

Fig. 13. Same as Fig. 12, but for $\Delta r_0 = 2\,\text{mm}$.