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Supplement of

Statistical precision of the intensities retrieved from constrained fitting of overlapping peaks in high-resolution mass spectra

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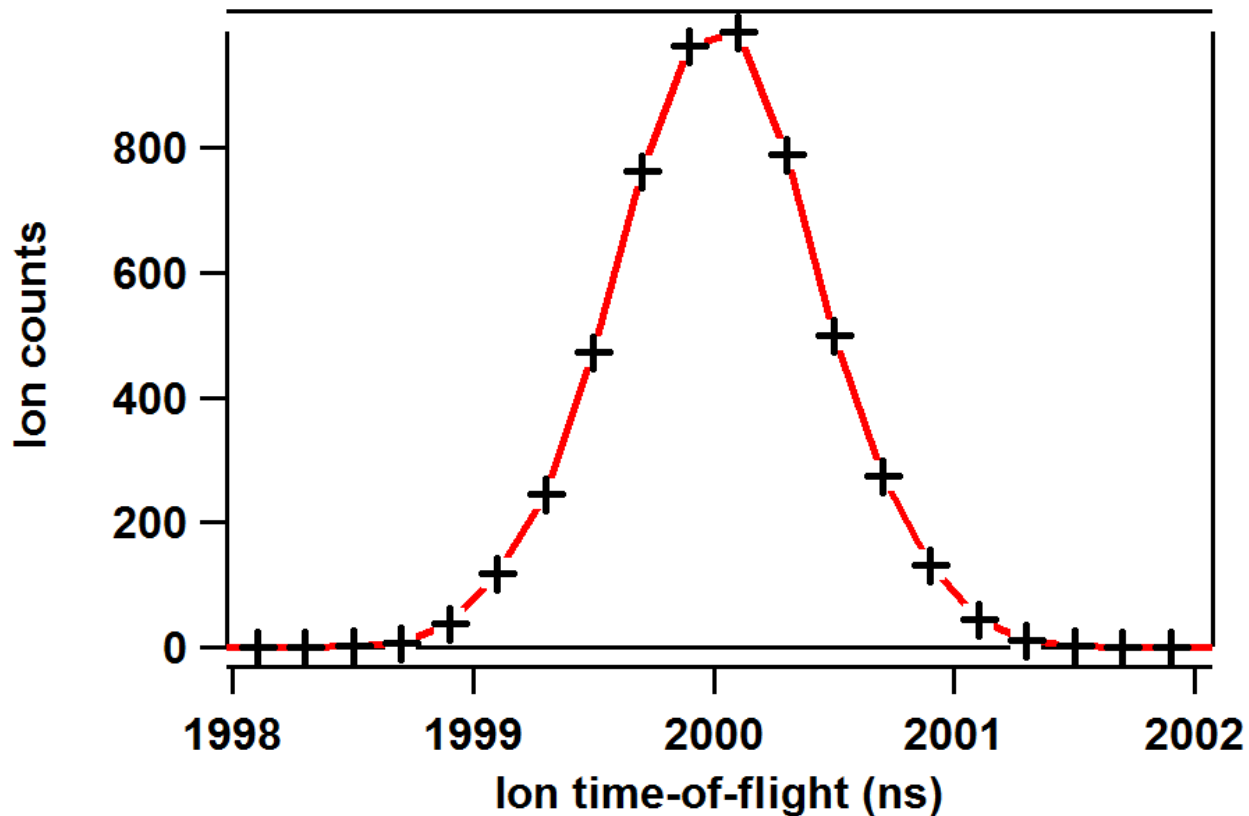


Figure S1. An example synthesised discrete measurement distribution shown as ion signal in counts as a function of ion time-of-flight (iToF). This consists of a single Gaussian peak centred at 2000 ns and data-point spacing 0.2 ns. The peak width FWHM is 1 ns.

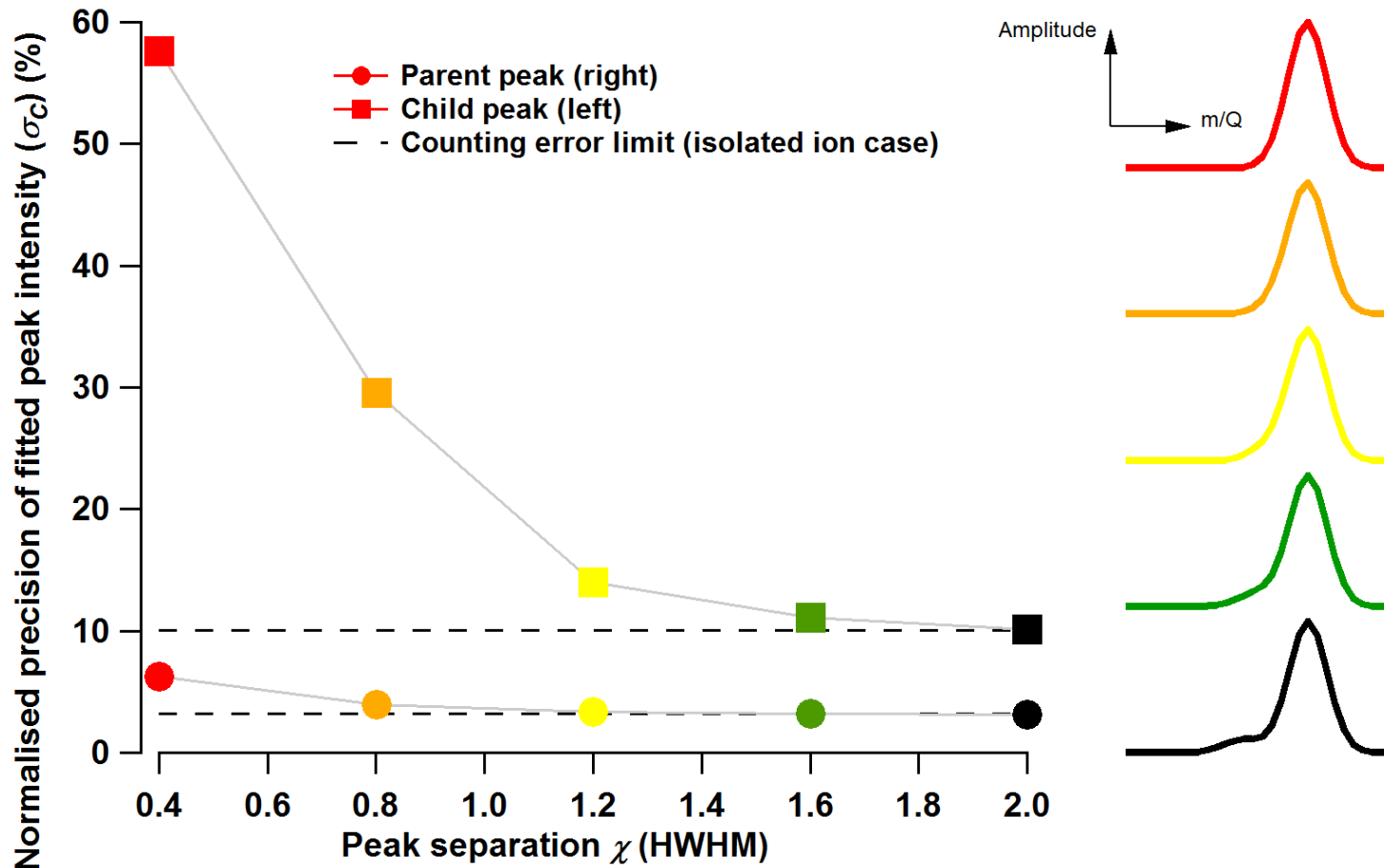


Figure S2: Precision in fitted peak intensity, σ_C , for 10,000 simulations of peak-fitting to a pair of overlapping Gaussian peaks degraded with counting error. Peak intensities = 1000 (parent) and 100 (child) counts (ratio 10), peak width = 1 ns. Schematics demonstrating the appearance of the measurement distributions are shown on the right.

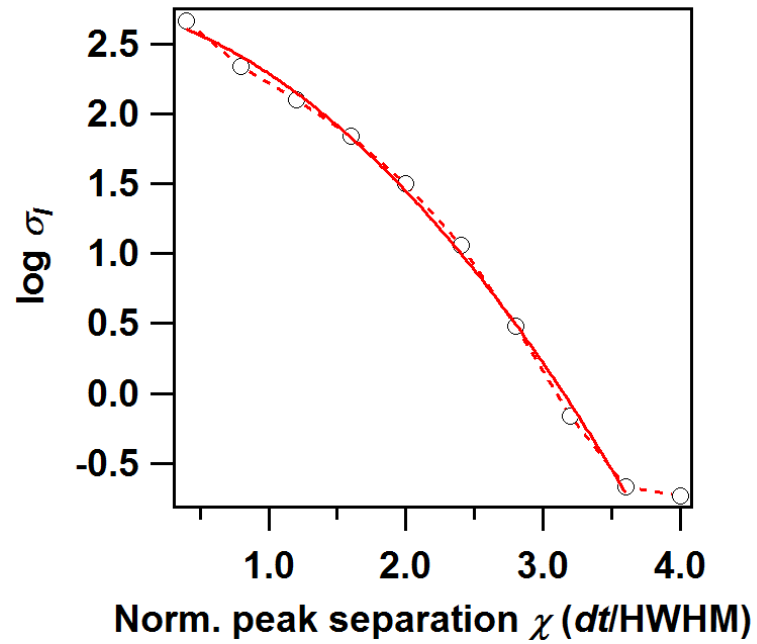


Figure S3: Example of the lower limit in precision on fitted peak intensity imposed by calibration imprecision.

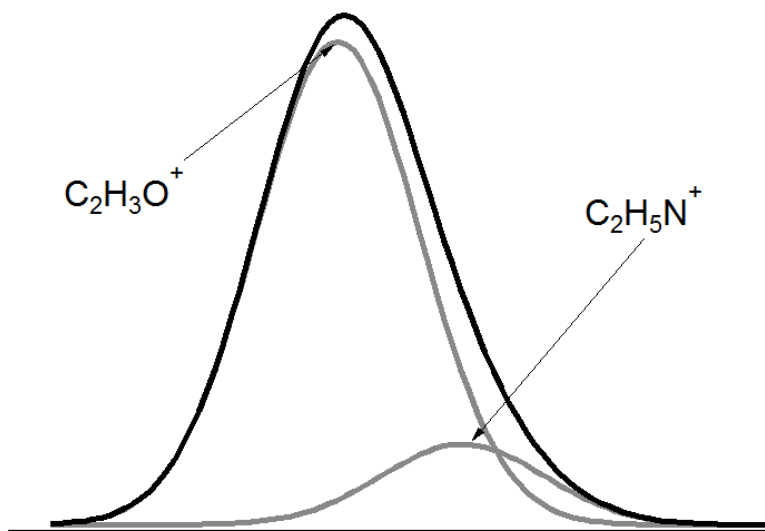


Figure S4: Theoretical HR-ToF-AMS spectrum at m/Q 43 with resolving power 1000. The two peaks shown are $C_2H_3O^+$ (43.015) and $C_2H_5N^+$ (43.043), with an intensity ratio of 6.

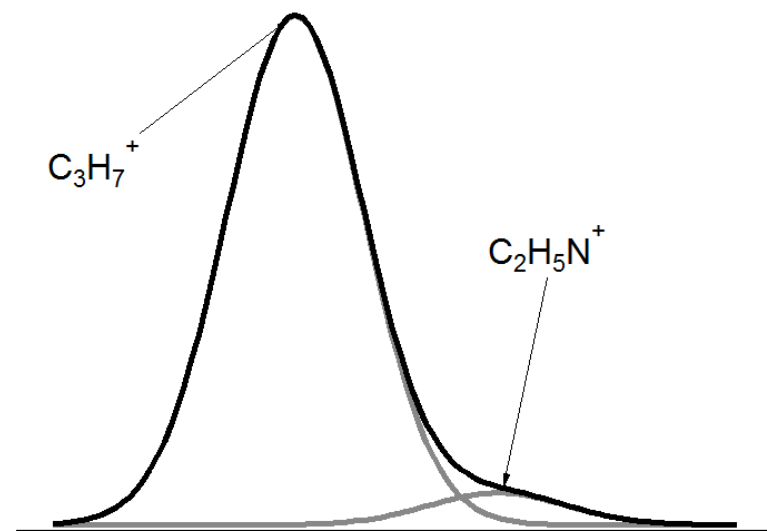


Figure S5: Theoretical HR-ToF-AMS spectrum at m/Q 43 with resolving power 1000. The two peaks shown are $C_3H_7^+$ (43.054) and $C_2H_5N^+$ (43.043), with an intensity ratio of 15.