Claims:

1. A dynamic method for the determination of a true ion current above noise in an RF/DC quadrupole mass spectrometer which measures ion currents, representing both real ion detection events as well as electronic noise, in time periods of substantially constant RF and DC voltages and produces an output signal, comprising:

   (a) during data acquisition, statistically computing digitized electronic noise values of each time period including a maximum and a width of their distribution;

   (b) using the position of the maximum and the distribution width to set a threshold in order to recognize the real ion detection events above noise for the respective time period under investigation; and

   (c) determining the true ion current from the real ion detection events.

2. The method according to Claim 1, wherein determining the true ion current in step (c) encompasses subtracting an electronic noise level given by the position of the maximum of the distribution from the measured ion current.

3. The method according to Claims 1 or 2, wherein step (c) comprises counting ion peaks in the output signal above the threshold.

4. The method according to Claim 3, further comprising statistically correcting a number of ions counted for overlapping peaks.

5. The method according to any one of Claims 2 to 4, wherein step (c) comprises determining the true ion current as an average true ion current by correcting all measurement values of the ion current above the threshold by subtracting the electronic noise level, adding the corrected measurement values to give an integrated true ion current, and dividing the integrated true ion current by a length of the respective time period.

6. The method according to any one of Claims 1 to 5, wherein step (c) comprises:

   (c1) counting ion peaks in the output signal above the threshold, and

   (c2) simultaneously with step (c1) and using the same output signal, correcting all measurement values above the threshold by subtracting the electronic

noise level, adding the corrected measurement values to compute an integrated true ion current, and dividing the integrated true ion current by a length of the respective time period to compute an average true ion current.

7. The method according to Claim 6, wherein the quadrupole mass spectrometer includes a multiplier to measure ion currents and the method further comprises determining a multiplier sensitivity for ions of a given mass by comparing results from steps (c1) and (c2).

8. The method according to Claim 7, wherein the multiplier sensitivity as function of mass is used to (i) transform true ion current measurements obtained by ion counting into true ion current measurements obtained by averaging and (ii) transform true ion current measurements obtained by averaging into true ion current measurements obtained by ion counting.

9. The method according to Claim 7, wherein the multiplier sensitivity as function of mass is used to optimize the voltage for the multiplier.