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(54) Title: A QUADRUPOLE MASS SPECTROMETER WITH ENHANCED SENSITIVITY AND MASS RESOLVING POWER

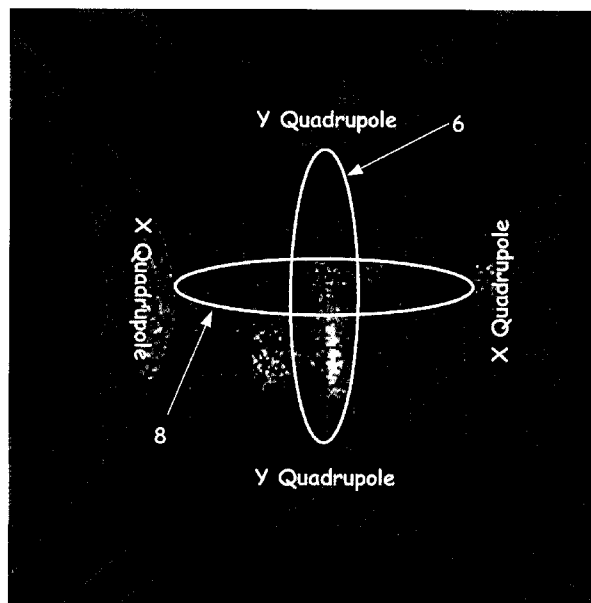


FIG. 2B

(57) Abstract: A novel method and mass spectrometer apparatus is introduced to spatially and temporally resolve images of one or more ion exit patterns of a multipole instrument. In particular, the methods and structures of the present invention measures the ion current as a function of time and spatial displacement in the beam cross-section of a quadrupole mass filter via an arrayed detector. The linearity of the detected quadrupole ion current in combination with its reproducible spatial-temporal structure enables the deconvolution of the contributions of signals from individual ion species in complex mixtures where both sensitivity and mass resolving power are essential.

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