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27. The ion guide of claim 16, wherein the first guide section comprises a plurality of generally-longitudinal rods.

28. The ion guide of claim 16, wherein the second guide section is positioned after the first guide section along an ion direction of motion, and the second guiding field is stronger than the first guiding field. 5

29. The ion guide of claim 16, wherein an internal guiding space of the ion guide narrows from a first end of the guide to a second end of the guide, the second guide being situated longitudinally opposite the first end. 10

30. The ion guide of claim 16, further comprising a third guide section longitudinally concatenated with the second guide section, for generating a third electrodynamic ion guiding field having a third generally longitudinal central field axis displaced from the first central field axis and the second central field axis. 15

31. The ion guide of claim 30, wherein the third guide section is disposed between the first guide section and the second guide section.

32. An electrodynamic ion guide for guiding ions into a mass analyzer, comprising: 20

a plurality of longitudinally concatenated quadrupole electrode segments for guiding the ions, wherein each of the plurality of electrode segments comprises a plurality of plate-shaped electrodes arranged symmetrically about a longitudinal central geometric axis of the guide; and 25

a voltage source electrically connected to the plurality of electrode segments, for applying a first set of guiding voltages to a first subset of the plurality of segments,

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for generating a first guiding field having a first central field axis, and for applying a second set of guiding voltages to a second subset of the plurality of segments, for generating a second guiding field having a second central field axis displaced from the first central field axis.

33. The ion guide of claim 32, wherein: the first guiding field is a symmetric quadrupole field, and the first central field axis substantially coincides with the central geometric axis; and the second guiding field has a symmetric quadrupole component and a dipole component.

34. A method of guiding ions to a mass analyzer, comprising:

inserting the ions into a guide chamber through an inlet aperture, substantially along a first field central axis of a first guiding field; and

guiding the ions from the inlet aperture to an outlet aperture of the guide chamber through a generally-longitudinal multi-electrode ion guide situated within the guide chamber, the ion guide having an inlet region in proximity to the inlet aperture and an outlet region situated opposite the inlet region, the ion guide generating the first guiding field along the inlet region, and a second guiding field along the outlet region, and second guiding field having a second field central axis displaced from the first field central axis, the second field central axis being aligned with the outlet aperture.

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