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Three-dimensional confinement of ions can be achieved in a typical linear Paul trap even without the use of the transverse rf quadrupole potential. It is only necessary to apply an identical rf voltage to the end sections on both sides of the central ion confinement section. The abscissa and ordinate of the picture represent the focusing-strength parameters determined from the rf voltage. Nearly  $10^6$  ions are successfully stored in this simple scheme.

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