ABSTRACT

TUNABLE AND MATCHABLE RESONATOR COIL ASSEMBLY FOR ION IMPLANTER LINEAR ACCELERATOR

A resonator circuit capable of resonating at a predetermined frequency is provided. The resonator circuit comprises a fixed position coil inductor (62) having a longitudinal axis (92) and a capacitor (88, 82) electrically connected in parallel with each other to form a resonator (60), so that respective first and second ends of the inductor and the capacitor are electrically coupled together at a high-voltage end (64) and a low-voltage end (66) of the resonator (60). A radio frequency (RF) input coupling (70) is coupled directly to the inductor (62) at the low-voltage end (66) of the resonator. A high-voltage electrode (72) is coupled to the high-voltage end (64) of the resonator. A first resonator tuning mechanism is provided for varying the inductance of the inductor, comprising a plunger (90) movable within the coil of the inductor (62) along the longitudinal axis (92). A second resonator tuning mechanism is provided for varying the capacitance of the capacitor (88, 82). The first tuning mechanism provides fine tuning of the resonator by means of varying the inductance of the inductor (62), and the second tuning mechanism provides coarse or initial tuning of the resonator by means of varying the capacitance of the capacitor (88, 82).

Figure 6