

COMPACT HELICAL RESONATOR COIL FOR
ION IMPLANTER LINEAR ACCELERATOR

Abstract

A compact coil design is provided for a linear accelerator resonator (70) capable of resonating at a predetermined frequency. The coil (90) comprises a plurality of generally circular coil segments (90a-90n), each of the coil segments having a polygonal cross section wherein flat surfaces (122) of adjacent coil segments face each other. The polygonal cross section may take the form of a rectangle having dimensions of length x and width y, wherein dimension x section defines the flat surfaces (122) of adjacent coil segments (90a-90n). The coil segments (90a-90n) are provided with a dual channel construction for providing the introduction of a cooling medium into the coil. The dual channel construction comprises an inlet passageway (118) and an outlet passageway (120) having separate a separate inlet (100) and outlet (102), respectively, at a first end (94) of the coil, and wherein the inlet and outlet passageways (118, 120) are connected and in communication with each other at a second end (96) of the coil.

Figure 5