

Title (en)  
SMALL DIAMETER STANDING-WAVE LINEAR ACCELERATOR STRUCTURE

Publication  
**EP 0202097 A3 19871202 (EN)**

Application  
**EP 86303603 A 19860512**

Priority  
US 73317585 A 19850513

Abstract (en)  
[origin: EP0202097A2] A compact, small diameter, standing-wave linear accelerator structure suitable for industrial and medical applications is disclosed. The novel structure utilizes a new type of coupling cavity for  $\pi/2$  mode, standing-wave operation. The coupling cavity fits into the webs between the accelerating cavities substantially within the diameter of the accelerating cavities. This is made possible by keeping the center section of the cavity thin to concentrate the electric field vector at the center of a section of the cavity and by enlarging the ends of a section of the coupling cavity to accommodate the magnetic field vector. This structure offers a significant reduction in overall diameter over the side-coupled, annular ring, and existing coaxial coupled structures, while maintaining a high shunt impedance and large nearest neighbor coupling (high group velocity). A prototype 4 MeV, 36 cm long, S-band accelerator incorporating the new structure has been built and tested.

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CPC (source: EP)  
**H05H 7/18** (2013.01); **H05H 9/04** (2013.01)

Citation (search report)  
• [A] US 3953758 A 19760427 - TRAN DUC TIEN  
• [AD] NUCLEAR INSTRUMENTS AND METHODS, vol. 193, 1982, pages 437-444, North-Holland Publishing Co., Amsterdam, NL; J.-P. LABRIE et al.: "The coaxial coupled linac structure"  
• [AD] IEEE TRANSACTIONS ON NUCLEAR SCIENCE, vol. NS-28, no. 3, June 1981, pages 3440-3444, IEEE, New York, US; S.O. SCHRIBER: "Accelerator structure development for room-temperature linacs"

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