

Upright Treatment/Fixed Beamlines/Compact Facilities: Machine Design Challenges

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AI: Not Always The Right Solution...



- What does “Gantry-less” mean?
 - Fixed beamline
 - Compact footprint+single floor (protons)
 - Upright treatment
- Fixed beamlines optimise simplicity:
 - Mechanically simpler with easier installation.
 - Usually use FODO lattice for beam optics.
 - Oldest systems scattering only: no scanning magnets.
- Compact systems optimise footprint:
 - Protons in photon space?
 - Removal of magnetic beamline (Mevion) helps compactness but gives less control over beam.
 - More stringent shielding if accelerator close to patient.
- Upright patient positioning optimises treatment:
 - Some indications better treated upright than supine.
 - Makes fixed beamlines more feasible: at expense of proton-specific indications...?

