FFAG Acceleration: Component List

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Basic Description

- Two stages, going from 3-6 GeV and 6-20 GeV
  - FODO cells, 3 m empty straights
  - 3-6: 72 cells
  - 6-20: 314 cells
- Distributed RF
  - Compute minimum RF required
  - May be more in real life
- Both systems use the same magnets
  - SC (about 6 T) or NC (about 2 T)
  - Combined function D and straight F

Magnets

- Length
  - F: 0.15 m (SC)/0.45 m (NC)
  - D: 0.35 m (SC)/1.05 m (NC)
- Aperture (full)
  - F: 22 $\times$ 10 cm
  - D: 15 $\times$ 10 cm

RF

- 3-6 GeV:
  - Need at least 136 MeV/turn
  - 24 one-cell cavities at 5.65 MV each (w/ transit time)
  - Only 5.9 MW of power needed
  - 2-6 GeV: Now need 322 MeV/turn, 72 cavities at 4.46 MV each, 11.0 MW
- 6-20 GeV:
  - Need at least 1.64 GeV/turn
  - 314 one-cell cavities at 5.23 MV each
  - 66.2 MW of power
- Could reduce average and peak power requirements with
  - More cavities
  - Two-cell cavities: space problem, though: only 3 m.