

**The Design of the IFUSP Main Race-Track Microtron Accelerator End Magnets,**  
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M.N. MARTINS, P. GOUFFON, IFUSP - We present the end magnets design of the main race-track microtron accelerator under construction at IFUSP, the last stage of acceleration in which a 5.1 MeV beam, produced by the race-track microtron booster accelerator, after 28 turns, attains 31 MeV. The end magnets incorporate auxiliary pole pieces to eliminate the radial displacement and the vertical defocusing caused by the extended fringe field. We also present the trajectories calculations performed with Ptrace code, in which the effects of the extended fringe field are shown and compared with those of the reverse fringe field. The end magnets, designed using Poisson code, have rectangular pole pieces with 73 cm x 170 cm. The last orbit radius, of about 65 cm, was calculated with Ptrace code for a magnetic field of 0.1585 T and energy gain of 0.93 MeV. It was decided to design an original C shape magnet, with auxiliary homogenizing gaps of 1 cm between the pole pieces and the yoke, creating a "magnetic shower", that provides uniformity of 0.3%. We should remark that this uniformity will be improved by the method of correction used in the microtron booster end magnets that enabled uniformity of 0.001% [1] in an average field of 0.1 T.

- [1] L.R.P. Kassab et. al., The Use of Correcting Coils in End Magnets of Accelerators, Proc. 1997 Particle Accelerator Conference, Vancouver, Canada.