DAFNE wiggler modification

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First step: glue 14 mm thick iron plates on all poles, separating the two wiggler halves by 28 mm, thus keeping the gap at 40 mm



Fit of the transverse behaviour of the vertical field component: $B(x) = b_0 + b_1 X + b_2 X^2 + b_6 X^6$ Central pole



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Second step: try to compensate b_2 and b_6 by assuming B(x) $g(x)^{-1} = cost$ minimum gap = 40 mm



Third step: try to compensate residual longitudinal dependence by $L \int B(x) ds = cost$





New transverse fit of the vertical field component: $B(x) = b_0 + b_1 X + b_2 X^2 + b_8 X^8$ Central pole



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Terminal pole:

add sextupole term calculated to yield a sextupole with $$K_{\rm MAD}\approx5\ m^{-2}$$









D, (m)



Table name = TWISS

Further work to be done

- Iron plates and aluminum separators being manufactured for 9 wigglers: central poles with vertical and longitudinal profiles, one terminal pole for each wiggler with vertical profile only, the other with sextupole profile.
- Measure the complete $B_{\rm z}$ map with new double Hall probe system.
- Measure B_z map at different terminal currents to find the correct field compensation on the nominal beam trajectory with displaced wiggler axis.
- · Measure B_x map for a complete definition of the wiggler field.