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Electron and laser beams mutual alignment in SPARC (INFN)

In the SPARC accelerator the electron beam and the laser beam crosses at an interaction point of really small size. So both the beams has to be precisely and mutually aligned.

As for the laser, scientists use to make manual alignment by means of mirrors and irises, using a low power pointing laser. This is definitely unpractical in the accelerator environment, where the access is forbidden during the operation: so the laser beam has to be aligned precisely with respect to the nominal path before turning on the electron beam.

A special support for the pointing laser has been designed and fabricated. The support has three mounting holes for the laser tracker CCR, so it can be aligned with respect to the nominal beam line. In the paper the procedure for the pointing laser characterization, the alignment work, as well as the evaluation of the accuracy obtained, are reported.

Summary

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