

The Status and Future of IHEP-Test Beam Facility in 2009

Test Beam Group

<http://www.ihep.ac.cn/facility/testbeam/index-English.htm>

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Basic Equipments in Hall 10

The Test Beam Facility located on the linear electron accelerator (LINAC) of BEPC and as parasitical mode running. That is only secondary beam line with middle energy in China. The beam line derived with LINAC end by the magnets bending a fixed angle (22°) provided the electron beam with momentum up to 1.89GeV/c and intensity around 1-2.5A per-pulse, and the frequency of the pulse repetition rate to be of 5-50Hz. This beam line is called E2 line with about $\sim 10^{10}$ /pulse electrons, which are to hit target or to fly directly into DUMP. The secondary particle beam derived from the scattering on the target, and it was accepted by the magnetic spectrometer system at the fixed angle of 40° relative to E2 line. This secondary particle beam line is called as E3 beam line.

The E3 line is a mixed beam of particles, which includes e^\pm , π^\pm , proton and little μ^\pm (through π^\pm decay), and the production of them will depend on the materials of the target. The W-C, pure C, Cu and Be targets have been adopted for various purposes of test. The momentum of the secondary beam (E3) particles can be adjusted between 300MeV/c and 1.3GeV/c, which was confirmed by D2 magnet according to different requirement.

The facility was equipped in Hall 10 there is an area of 540m², the crane has a capability of 10 Tons, this experiment area is 24 square meter.

The parameters of the IHEP-TestBeam

Parameter	Primary electron beam (E2 beam line)	Secondary particle on E3 beam line ^{#)}
Charge/Bunch	$10^{3-10}e$	Single and multi-particle
Energy	1.1-1.89 GeV	0.3-1.3GeV
Energy Spread	< 1%	0.5%
Position resolution		400 micron with single particle; 3 millimeter with double particle
Kind of Particle	e^\pm	e^\pm , π^\pm , p
Bunch width (ns)	1.2	
Bunch rate (Hz)	5-50	4-6 (single particle)/s; 20 (Mix-particle)/s

^{#)} the valid will be at May 2010.