

H line; a New Beam Line for Fundamental Physics in MLF

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Since the first beam in 2008, Muon Facility, MLF, J-PARC (MUSE) has been operated, and the beam intensity reached at the 3×10^6 /s, the most intense pulsed muon beam in the world, under 200-kW proton beam.

From the 2-cm thick graphite target, four secondary muon beam lines are able to be extracted to the experimental areas. D line is completed and is under common use. U line is under commissioning to generate ultra slow muon beam. S line is under construction and the first beam will come in this autumn. The forth beam line which is named H line is planned to be constructed.

H line is designed to have a large acceptance, momentum tunability, and ability of kicker-device and Wien filter use. The design concept of H line is similar to U line, and a large aperture solenoid magnet is applied to obtain an intense beam, but a bending magnet is used instead of curved solenoid like U line to tune the momentum. This beam line will provide an intense beam for fundamental physics studies which will occupy the experimental area for a long time in comparison with material-science programs. At present, three experiments [1-3] and a muon transmission microscopy project are proposed in H line.

Because MUSE has been operated since 2008, the working area for the magnet installation beside the muon-production target chamber is expected to be highly activated. Thus, the frontend magnets were installed in the summer shutdown in 2012 antecedently to the downstream. The design work of the devices in the downstream is in progress. The details of the installed devices and the design work are presented.

References

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